AUG 31 1942

Medical Library

THE AMERICAN JOURNAL of PSYCHIATRY

VOLUME 99
NUMBER 1
JULY 1942

Official Organ of
THE AMERICAN PSYCHIATRIC ASSOCIATION

JULY CONTENTS 1942

THE PRESIDENTIAL ADDRESS. *J. K. Hall* 1

JAMES KING HALL, A. B., M. D., LL. D. *H. C. Henry* 8

THE PROBLEM OF SOCIAL CONTROL OF THE CONGENITAL DEFECTIVE. *Foster Kennedy* 13

EXONERATION OF THE FEEBLEMINDED. *Leo Kanner* 17

A SURVEY OF NEUROPSYCHIATRIC WORK AT THE BOSTON INDUCTION STATION. *Wilfred Bloomberg and Maj. Robert W. Hyde* 23

NEUROPSYCHIATRIC EVALUATION OF THE POTENTIAL SOLDIER. *Lt. H. H. Goldstein* 29

PSYCHIATRIC PROBLEMS IN MILITARY SERVICE DURING THE TRAINING PERIOD. *Arthur O. Hecker, Marvin R. Plesset and Philip C. Grana* 33

PSYCHOGENIC DISORDERS AND THE CIVILIZATION OF THE MIDDLE AGES. *Alfred Gallinek* 42

STUDIES CONCERNING THE ACTION OF DILANTIN. *Felix Frisch and Albert W. Pigott* 55

THE POSITIVE CONDITIONAL SALIVARY REFLEX IN PSYCHONEUROTIC PATIENTS. *Jacob E. Finesinger, George F. Sutherland and Frances F. McGuire* 61

LEVEL OF ADRENO-CORTICAL SUBSTANCE IN THE BLOOD DURING HYPOGLYCEMIC TREATMENTS FOR SCHIZOPHRENIA. *Esther Bogen Tietz and Sanford M. Birnbaum* 73

OPIATE WITHDRAWAL TREATED WITH INDUCED HYPOGLYCEMIC REACTIONS. *Sidney J. Tillim.* 84

THE USE OF SHOCK THERAPY IN 305 MENTAL HOSPITALS. *Lawrence Kolb and Victor H. Vogel* 90

PRESENILE PSYCHOSIS OF THE JAKOB TYPE. *George A. Jervis, Herman M. Hurdum and Francis J. O'Neill* 101

THE TOXIC DELIRIOUS REACTIONS OF OLD AGE. *G. Wilse Robinson, Jr.* 110

THE USE OF AMPHETAMINE SULFATE (BENZEDRINE) IN CHILD PSYCHIATRY. *Lauretta Bender and Frances Cottington* 116

PSYCHOLOGICAL ASPECTS OF HOBBIES. *William C. Menninger* 122

FLUCTUATIONS OF BLOOD IODINE IN CYCLIC PSYCHOSES. *Rudolph Neustadt and L. Gladys Howard* 130

MINIMUM STANDARDS FOR POSITIONS IN PSYCHIATRIC SOCIAL WORK IN A MENTAL HOSPITAL 137

COMMENT:

Civilian Morale, 140. Euthanasia, 141.

NEWS AND NOTES:

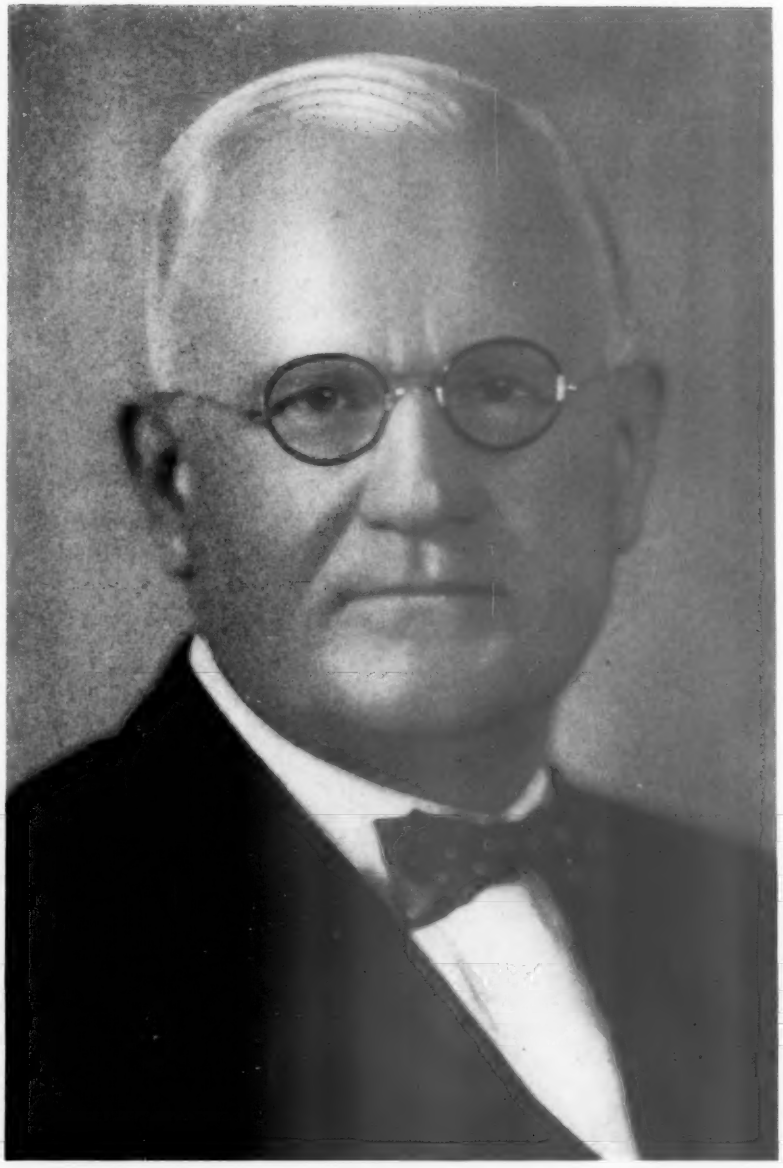
The Boston Meeting, 144. New York Academy of Medicine Graduate Fortnight, 148. New York Psychoanalytic Society, 148. Cleveland Juvenile Court, Position for Psychiatrist, 148. Southern Psychiatric Association, 148. Dr. Tallman Director of Mental Hygiene, Michigan, 149. The Treasury of Science, 149. National Association of Private Psychiatric Hospitals, 149. Course in Graphology, 150. War Service Appointments of Medical Officers and Nurses, United States and Alaska, 150.

BOOK REVIEWS:

Psychology of English. *Margaret M. Bryant* 151
The Therapy of the Neuroses and Psychoses. *Samuel Henry Kraines* 152
The Psychology of the Physically Handicapped. *Rudolf Pintner, Jon Eisenson, and Mildred Stanton* 152
How to Teach Children Music. *Ethelyn Lenore Stinson* 153
Play for Convalescent Children in Hospitals and at Home. *Anne Marie Smith* 153
Get More Out of Life. *Catherine Groves* 154
You Can Be Happily Married. *Gilbert Appelhof, Jr.* 154
Mental Hygiene for Community Nursing. *Eric Kent Clarke* 154
The 1941 Year Book of Neurology, Psychiatry and Endocrinology. *Hans H. Reese, Nolan D. C. Lewis and Elmer L. Sevringhaus* 155

IN MEMORIAM:

Stewart Paton. *Smith Ely Jelliffe et al* 156



J. K. Hall

UNIV. OF MICH.

THE PRESIDENTIAL ADDRESS[1]

Psychiatry and Psychiatrists in the Democratic Way of Life

J. K. HALL, M.D., Richmond, Virginia

Although the word psychotherapy had not come into being, a remarkably successful use of mental healing was made in our own country in 1812. Dr. Benjamin Rush, our patron saint, was the therapist, and his two patients were your own John Adams and our own Thomas Jefferson. All the circumstances associated with the healing of the patients were unusual. Both were old; the attending physician was no longer young; the treatment was applied to each patient *in absentia*. The therapy was wholly psychic. The physician was physically far removed from each of his patients. He had no opportunity, perhaps he had no desire, to investigate the somatic situation of either elderly man. He decided upon the therapy to be made use of, and he applied the treatment to each far-away patient; and he did it with a touch of boldness and of psycho-somatic certainty equal to that of many a shock-therapist of our own times and with a degree of patience and of hope worthy of any psychoanalyst.

New Year's Day, in 1812, was a day momentous in the life of Dr. Benjamin Rush, of John Adams and of Thomas Jefferson. That day has become memorable in American literature and in American history. The day should be marked, too, on the calendar of every American psychiatrist as *dies mirabilis*. On that New Year's Day, one hundred and thirty years ago last January 1st, John Adams took up his quill and wrote a letter to Thomas Jefferson. The letter was transported neither by plane nor by rail, but probably principally on horseback, and it must have travelled many a day in the raw winter weather before it reached the top of the little mountain down in Virginia on which the author of the American Declaration of Independence and of the Statute of Virginia for Religious Freedom was spending his last years. John Adams, on the day that he wrote to Thomas Jefferson, was almost eighty years old. Jefferson was only seven or eight years younger. Dr. Benjamin Rush, friend and fellow-patriot and co-signer of the Declaration with each of them, was almost as old as Mr. Jefferson.

In those far-away times our sanguineous and political forebears took their civic philosophy seriously, and many of them besides John Randolph and Henry Clay made use of each other on the field of honor as human targets. They exhibited equal willingness to proffer their lives in defense of their opinions and of their passions. They were not indifferent about their duty to their country. It must have been a serious, solemn, humourless period in American history. The founding fathers did not indulge in joke and jest. They were engaged in grim business.

George Washington remained in the Presidency for eight years. Perhaps he, and not John Adams, might have been the first President to occupy the White House, had he so desired; and, had he been politically ambitious, he might have spent the remainder of his life as the new government's first Chief Magistrate. But he was probably more interested in returning to the congenial life at Mount Vernon than in setting a precedent that was eventually to be disregarded.

John Adams did not find life wholly to his liking in the new presidential mansion and in the headship of the world's only democracy. He would have been glad enough, perhaps, to go back to Braintree, of his own volition, after he had spent four years in the new nation's new and crude capitol. But he and his beloved wife did not like to be evicted from the White House by Thomas Jefferson and his republican horde, and both the Adamses boldly said so. Then John Adams and his wife ceased to have communication of any kind with their dear friend of other days. For many years no messages passed between them and Thomas Jefferson.

Dr. Benjamin Rush, busy physician, teacher, writer, civic-minded citizen, politician, too, perhaps, was troubled by the chasm

[1] Delivered at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

that had developed between Mr. Jefferson and the Adamses; and he was anxious that the last years of all of them be spent in peace and harmony. And Dr. Rush succeeded in persuading Mr. Adams to write again, as he had done many a time in days far-gone, to his old friend at Monticello. And the letter of John Adams, written on New Year's Day, in 1812, soothed the soul of Thomas Jefferson; and Jefferson's response, on January 21, 1812, comforted the old statesman in Massachusetts; and the two old men were loving friends again. So they remained until each spoke, with his last breath, the name of the other on July 4, 1826. But the many letters written by them to each other, from 1812 until their deaths fourteen years later have been preserved; and those letters enrich our literature and our national history.

I am looking into the faces of the distinguished psychiatrists of our country. I doubt not that any one of you would count it an achievement of the first order if you were to restore to mutual affection two former Presidents of the United States who had lived for several years in painful disharmony with each other.

The student of the mental aspects of the aging process might profitably turn to careful consideration of Dr. Benjamin Rush as a successful psychiatrist, even in the domain of geriatrics. Those two patients of his were old in years; in service to their countrymen; and they had been the recipients of their country's highest honors; they were highly intellectual, well educated; they had lived abroad and had matched their minds with the world's best wits. But in thought about each other, in personal association, in dualized patriotic purpose, they had finally stood apart. As the years had rolled each must have wondered why the other was so hostile to him. In reawakening the respect and esteem and affection, one for the other, Dr. Benjamin Rush ministered not only to their comfort, but he taught each of the elder statesmen that men may differ profoundly in opinion but remain honorable and affectionate friends. Are the people of our own country in so much need today of any other lesson?

The interrogatory tends to beget indulgence in speculation about the function of psychiatry in the democratic way of life and about the nature and the scope of the duties of the psychiatrist—to his fellow-mortal and to his government, in peace and in war.

The adventures of the immortal Alice in Wonderland and elsewhere are addressed to children, but their philosophy is intended for the most erudite and sophisticated grown-ups. Uncle Remus, the uncannily wise old Negro, in telling his marvelous stories about animals to the wide-eyed little boy, was instructing all mankind in an understanding of human behavior.

Are we mortals fundamentally interested in any other phenomena than each other? And what is the nature of our concern about each other? The printing presses and the communications facilities are busily engaged, night and day, all 'round the world, in diffusing and in gathering up the universal gossip of man about man, of woman about woman, and of each about the other. Mankind is hopelessly intro- and extra-verted.

Because of my realization, fractional though it may be, of the circumscription of my own comprehending faculties, and out of consideration for your intelligence and your comfort, I should not here participate in the cosmic chatter, most of which is mere noise; and thereby aggravate the general confusion. But man would seem to be held perpetually spell-bound by his fellow-mortal's behavior—be it that of a god or of a beast. How much farther might we not be along the highway of progress, in philosophy, in science, and in social understanding, had not so much of man's energy been devoted to the observation of human folly! Am I held in rapt, fixed fascination by yonder man, foolish or wise though he be, for the reason that in him I behold myself—in deep disapproval or in boundless admiration? Be the answer what it may, the conclusion of the matter is that we are infinitely much more alike than unlike; Judy O'Grady knows it, and the Colonel's lady fears it—is true.

Time was, and not so long ago, when the patient-to-be-operated-upon reached the hospital in a moribund condition; death followed the operation. The delay was deadly. The dread of the diagnostic pronouncement of the surgeon was so great that the surgeon was

called only in final desperation. But not even the most skillful operator could revitalize moribund tissue. The surgeon was blamed for the consequences of family and patient procrastination, begot of fear.

And time was, too, and not so long ago, when the diagnosis of pulmonary tuberculosis constituted a preannouncement of impending death. Transfer of the consumptive to the sanatorium in the last stages of phthisical disintegration, lessened, all too late, the danger of infection of others. And the transfer bespoke a prognostic hope that was non-existent.

The surgeon finally succeeded, however, in raising in popular appreciation the proffer of his ministrations—sometimes most impressively, simply by his refusal to operate on a patient already *in articulo mortis*. Patients and people slowly discovered that if surgery were to have any restorative value, the surgeon must be called, not at sunset, but at sunrise. And the surgeon, sometimes in almost brutal disregard of the layman's diagnostic judgment, began to insist that cramp colic be called acute appendicitis and that a gastro-intestinal ulcer be called by name and not be permitted to masquerade as indigestion, sometimes so severe that even Hoffman's Anodyne could not bring relief.

Had the neighborhood physicians applied to Patrick Henry's abdominal wall the sharpened steel, instead of blue mass in repeated pills to the interior of his alimentary tube, the removal of his appendix might have made possible for the new nation the utilization of his great wisdom for one or two additional decades. General Thomas Sumter, a contemporary of the great orator, lacked only two years of living a century, in spite of hostile Indians, a British Army, and the myriad mosquitos of the swamps of the Santee.

Tuberculosis has ceased to be the Captain of the Men of Death only because the diagnosis can now be made in the incipiency of the infection, and treatment can be instituted before the patient has become devitalized. So far as I know, the tubercle bacillus is no less virulent today than several decades ago, when the disease was deadly. But every effort is now made to discover the infection in its very infancy, and to assail it with all the artillery of medical science.

The surgeon and the internist have at last become established in medical respectability. Their opinions are sought early and their suggestions are usually not derided.

What shall we say, in contrast, of our psychiatric practice, in diagnosis and in therapy? Does the surgeon permit the jury of twelve steady yeomanry to make diagnoses for him in the open court-room? Are we psychiatrists as responsive to the first intimations of psychotic presentations as the surgeon and the thoracic internist are to initial symptoms? Surgical conditions are attended to by the surgeon; tuberculosis, by the internist. Has mental sickness been taken within the fold of modern medicine as completely as acute appendicitis and as tuberculosis? If not, why not?

Why do we, as medical men, jointly engage in psychiatric diagnostic surveys and pronouncements with a lay jury, in a court-room, or elsewhere? Such a procedure is unscientific, undignified, fatuous, discreditable alike to law and to medicine and to civilization. Are we psychiatrists sufficiently insistent that behavior-digressions represent manifestations of sickness; and that all disease belongs within the walls of modern medicine, whether the morbidity be of the structure or of the function, if such differentiation be possible and permissible? Are we sincere in our asseverations that psychic and personality perturbations are medically discoverable; that they can be analyzed, measured and estimated, and that a judgment can be formed about them, and that they are accessible to therapeutic effort? Can such procedures be made use of, in reference to an individual, within the twinkle of an eye, or is time a necessary factor, in developing an understanding of man's mind? Is it possible for a human being, military recruit, or what not, to have, within a moment or so, at the hands of any psychiatrist, an examination that is worth the coin of a tinker, or is of even infinitesimal value to the government or to the aspiring son of Mars?

Practically all people who entertain the universal delusion that man has finally become civilized are now engaged in the most destructive war man has ever known. Soon

after Christopher Columbus sailed the western seas, a Prussian Polish scholar, Nicolaus Copernicus, substituted for the earth the sun as the center of the cosmic structure. Man's egotism has never suffered a comparable insult. From that insult man has not recovered and probably can never recover. The Polish painter, ecclesiastic, mathematician, economist, physician, astronomer, made of man's spheric home a mere atom in a universe limitless in extent, moving silently but majestically and forever around a central sun, the radiant source of all energy and light and life.

The final acceptance of the Copernican theory reduced to cosmic inconsequentiality man's earth-home and the home also of his gods. And man's steadily increasing knowledge of the ways of Nature—what else is science?—enlarges his powers and, in consequence, lessens his fear of forces hostile to him—all hostile forces, indeed, save those of his fellow-man. Modern man's mechanization of life and of warfare, turns his eyes away from the summit of Olympus to the laboratories and to the industrial plants. Could man's destructive and self-protective might be augmented to his full satisfaction by irresistible mechanical fabrications, man's libations to the gods would cease to be poured, and he would become less and less theo-minded. Man's belief that he has become a scientist, has practically destroyed his gods. Will man's scientific knowledge ultimately destroy him? Can man conceive of military homicide sufficiently multiplied to constitute universal suicide?

By some process wholly beyond the reach of the understanding of little Alice, the Cheshire Cat slowly but finally completely disappeared, the ultimate feature, an enigmatic smile. May man some day disappear entirely on the field of battle? Is the possibility beyond the reach of the imagination?

In the ceaseless struggle of wit and cunning between Brer Fox and Brer Rabbit, Uncle Remus told the little boy that Brer Fox finally fabricated of an admixture of turpentine and tar a wonderful Tar-Baby. That figure was in my childhood a more wonderful work of art than the Hermes of Praxiteles ever was to the Greeks. Brer Fox placed the wonderful baby on the roadside, concealed himself nearby, and soon indulged himself in convulsive laughter at Brer Rabbit's discomfiture and helplessness resulting from his becoming all stuck up from his smacking the Tar-Baby; first with fists, then with his feet, and finally with his head. The little boy was never able to find out, however, whether or not that was the end of Brer Rabbit. Some 'lowed Jedge B'ar come along and turned 'im aloose, and some 'lowed he didn't. Uncle Remus' Brer Rabbit was one of the smartest of all the animals, but he didn't always have sense enough to look before he struck.

All the leaders in the Old South were tutored in wisdom and in morals by the old Negro—patient, tolerant, more profoundly pedagogical than Socrates. Always the old Negro kept both his feet on the earth, and in consequence he continued to live, unlike Antaeus in ancient mythology, who, in a tragic moment, was lifted from the earth, his mother, and instantly perished at the hands of Hercules, who knew that all strength is of the earth. Has the interposition betwixt modern man's feet and the earth of a stratum of concrete, asphalt, or bricks, separated man from the sources of his sustenance—physical, moral, spiritual?

Thomas Jefferson, a witness of the riotous revolutions in Europe, recorded his opinion that urbanization and industrialization of our American people would ultimately bring across the Atlantic the fate that had repeatedly befallen older civilizations. And both he and Patrick Henry foretold civil war if the recently adopted Federal Constitution should stand without addenda concerned about the individual's individualism and his individual safety. Only God and man are worthy of thought. But George Mason's ten amendments—our Bill of Rights—were unable to prevent McClellan's knocking at the door of Richmond, and to prevent Chancellorsville, the Wilderness Campaign, Gettysburg and Appomattox. For ever and forever there is reiterated intimation that the moving finger writes.

I am without apology for my perigrinations in the past. One of the Emersonian dicta was—I almost said, in mistake—that out of Plato still come all things talked about and written about, even today, by men of thought.

I wonder, often, if we comprehend any more clearly the meaning of schizophrenia, for example, than Meno understood the Socratic conception of virtue. And another Concordian pronouncement specifically pertinent to us is the brief dogma that there is one mind common to all individual men. In contemplation of such philosophy one should be impressed by the influence and the dignity of the past in all psychiatric problems—indeed, in all problems. The study of history, though at times painful and disillusioning, teaches patience and courage and hope and humility. The physician, the psychiatrist, especially, who is uninterested in the philosophy of history, is doomed to do his professional thinking and his medical work mechanically, and, therefore, fractionally. The basic structure in all things is time, whether the thing be a stone or a disease. The physician who is not history-minded can neither obtain nor understand the history of a patient.

Man's most impressive school-master always has been pain. He who would not be instructed and disciplined by that impressive pedagogue is doomed. Were that not a platitudinous truth, the world's great prose-poem, Job, would be a meaningless story; and the life of Moses and of Socrates and of Jesus; of Paul, and of the patriots at Concord, at Bunker Hill, at Valley Forge, and at Yorktown; at Manassas, Seven Pines, Shiloh, Cold Harbor, and the Crater would be without inspirational influence. Lee and Lincoln alone would make forever imperishable the English-speaking peoples. If in these critical days we are not willing to learn by suffering and by tragedy the solemn lesson taught throughout the ages, we shall not deserve to survive. The pathway of every individual and of every group that has led to the mountain's top has always passed through Gethsemane. The dead rule the world. All life is sustained by pabulation that was once living matter.

The sands run low, but I cannot withhold some expression of my deep concern about those who carry on the most important work in mental hygiene in our country. I speak, of course, of the so-called assistant physicians in the state hospitals and of other physicians who occupy comparable positions. Those physicians, young or aging, do most of the daily diagnostic and therapeutic work in psychiatry in the United States. Medical superintendents are of some importance, to be sure, but a superintendent's resignation or removal would be inconsequential in comparison with the withdrawal of all the other members of the medical staff. The assistant physicians make up the soldiers in our psychiatric army.

Are the assistant physicians being well cared for, comfortably quartered; adequately compensated; treated with the respect and dignity they deserve? The latter feature of the interrogatory refers not to the administering superintendent, but more especially to the Board of Directors, to the State government, and to society, for whom, in the last analysis, the assistant physicians give their labors and, at last, their lives. In those hospitals remote from populous centers and from other hospitals and distant from lively medical activities, in one of which I once lived most happily, facilities should be provided to encourage and to inspire, and to make possible the continuing self-development of the young physician, not in psychiatry, alone, but also in educational and cultural interests.

Every state hospital should maintain a good general library for patients, for employees, and for the nurses and the doctors. And a medical library of books and of current medical literature, indexed and well-managed, should be, aside from the patients, the most stimulating feature of every hospital.

Assistant physicians should be encouraged to belong to medical organizations, to participate in their activities, and to present to the public in plain speech and in non-technical writing, information about mental hygiene, in all its aspects.

All physicians of good repute who give their lives through psychiatric ministrations to their fellow-mortals, in Canada and the United States, should be members of this body. The physician and the Association would each be bettered by the affiliation.

Jestingly, I replied a few years ago to a question about what I should advocate most emphatically were I in my present predicament, that a presidential edict would be issued making punishable by permanent detachment from the Association every mem-

ber who would use at any time within the current year any word that he himself did not fully understand; and that the use of all psychiatric words should be forever forbidden. A fellow-member has inconsiderately reminded me of the injudiciousness of my remark and of my own verbal addiction.

The distance in thought from assistant physician to superintendent and on to the presidency of The American Psychiatric Association is not so interminable as the travels of Odysseus. Thirteen of those who have given of their lachrymations and of their labors as Presidents to the welfare of this ancient and honorable organization are still somatically and psychically vital; and many of them are enriching this meeting by their contributions and adding to the pleasure of all of us by giving us the opportunity for communion with them. John Quincy Adams—it has been difficult always to keep a member of that family down, either the first Adam or any of his descendants—went to the House of Representatives after his residential period in the White House. There Lincoln, his desk-neighbor, had the benefit of the former President's great erudition, his cosmopolitan experiences, and his innate candor and courage. This Association should constantly have the benefit of the wisdom and the experiences of our former Presidents. I have made a personal effort, attended by as much urgency as politeness would permit, to induce each of them to attend this meeting and to counsel us. Once, when secretary of a medical organization, I succeeded in persuading the former Presidents to organize themselves as a club, and the annual dinner of the club was always a lively affair. This Association does not forget its Presidents, and it would beg them always, when possible, to attend the annual meetings and to participate in all the activities; the former Presidents will not mind my saying that they should always attend the meetings of the Council. Dr. Hill, *exempla gratia*, remained active as President of the Tansy Club until his last breath!

Each of the three Surgeons General was invited to attend this meeting, both by your Secretary and by your President. I wish they were here. We need them—more, I hope, than they need us. But Dr. Parran had an engagement to speak that he could not cancel; Dr. McIntire expressed the earnest hope that he might be able to fraternize with us for at least a few hours; Dr. Magee confessed that he was as firmly bound in his office as Prometheus to the rock.

The President and the President-Elect of the American Medical Association likewise should have been given insistent invitations to come as guests to our meeting—Dr. Lahey, the President, is right here in Boston; Dr. Fred Rankin, the President-Elect, is in Washington. He and I are, by the way, natives of the same county in North Carolina, and he came into high school just as I was leaving it.

We should constantly give earnest thought to the chasm that separates—how shall I say it in simple language?—sickness of mind from sickness of body. But the chasm is real; it does hurt to medicine, to many mortals, and to our economic and social life and to human happiness. The more intimately we physicians associate, the more keenly we realize how much and how little we each know. Out of such realization come mutual understanding and sympathy—and greater strength and larger hope.

A year ago, at the conclusion of the meeting in Richmond, most largely attended in the Association's history, the total membership of the organization reached 2,667. Of that number 1,452 are members and 862 fellows. Office-holding in the Association is, by a mandate of the Constitution, delimited to fellows. Members may vote, but they may not hold office, by election or by appointment. The total membership has almost doubled since 1933. In that year the total membership was 1,517. The number of members, in contradistinction to fellows, was 545. In 1933 the fellows numbered 888.

In 1936 the number of fellows had increased to 900. The fellows have lessened in number since that year, and now there are 862 fellows. What is the meaning? I do not know. Should office holding, by election or by appointment, be delimited to a small group, like voting in some of our Southern States? May I beg each of you that you think, with your face looking heavenward, upon these things?

Is democracy merely Anglicised conjoined Hellenistic words, or is it a way of life, the *fons et origo* of which is in each human

heart? This Association is steadily increasing in numbers. Is it growing with equal step in strength? The duties and the responsibilities of the Association are constantly becoming more and more weighty. If the Association is to be competent to deal with the complexities and the tragedies of life, the Association must be forever reaching out its hands to youth for help. Spontaneous hope and enthusiasm and courage are attributes of youth; scarcely of mid-life, and certainly not of senescence. I believe in youth; in its high spirits, its optimism, its cheerfulness, in its daring, its vigor; even in its folly and its recklessness. The makers of the Federal Constitution were young men. Jesus at twelve was wisdom incarnate. We aging white-heads should crown our young men and gladly pass to them the stirrup-cup. My designated successor is such a youngster.

To the spirit of him whom Destiny, by a decree that Zeus himself could not understand, prevented from standing here, I make my obeisance and my apologies. Were Dr. H. Douglas Singer in this station, as I would that he were, you would not have been listening to mere sound and sonority, but you would have been lifted up. I speak to his spirit in beseechment that his influence may always bless us at our annual assemblages.

I go. But to you, a great host of you, individually, I first give my hearty thanks, for your goodness to me, for your helpful counsel and for your comforting assurances. Only those with whom members of the many committees labor can appreciate the values and the difficulties of their diligence and their unselfish toil. In my own name, and for the members of the Association, I give them grateful thanks. I express my deep appreciation to the Secretary-Treasurer. Atlean in soma and in psyche and in spirit, he can always take on another load. And upon my Butlerian successor, possessed in balanced fashion of *suaviter in modo* and *fortiter in re,* I invoke the blessings of the Olympic hosts. Our Executive Secretary and his co-workers are unwearied in their labors, for which our appreciation is perennial.

The angry mood of Mars and recurrent influenzal visitations and disruption of transportation facilities fractionalized and minimized an Odyssey that would have taken me into each of the States and to each of you in your daily labors.

I prayed earnestly that the eternal decrees might be otherwise. Yet we are told that the dice of the gods are always loaded. Against the day of the Centenary in Philadelphia, two years from now, only the echoes of the cannon can be heard. And by the time of that historic meeting the United Nations of the world shall be holding steadily and securely the sceptre. I hope, yea, I pray that meeting in Philadelphia may be held in one hall, all of its sessions. The Association may come back yet to that old custom. And, eventually, all men everywhere, shall be hearing, in every language; and beholding, in all that transpires upon the earth, in the waters beneath it, and in the farthest reaches of boundless space, the solemn, ages-old, stabilizing, comforting and reassuring command:

Be still, and know that I am God.

JAMES KING HALL, A. B., M. D., LL. D.

PRESIDENT, 1941–1942

A BIOGRAPHICAL SKETCH

BY H. C. HENRY, M. D.

To northern Ireland their ancestors had come, but the hard life there and the stories they heard of the spacious New World tended to increase their discontent. The so-called Scotch-Irish were a virile, restless, adventurous people who doubtless experienced difficulty in adjusting themselves to any government not created and dominated by them. They were seldom satisfied with the existing order. The frontiers ever beckoned to them. During the hundred years betwixt seventeen hundred and eighteen hundred thousands of the descendants of the Scotch who had settled in Ireland came to the Colonies in North America. They came not only in search of political and religious freedom, but they came, also, because of the hope that was afforded of a more abundant life. Ireland was too small for the Scotch-Irishmen. Both their minds and their bodies resented restraint. It is easy to understand the irresistible appeal made to them by the New World. They came into it in great numbers. Amongst them were the ancestors of Patrick Henry, Andrew Jackson, Sam Houston, Stonewall Jackson, Cyrus H. McCormick and Woodrow Wilson. From such ancestry is derived the subject of this brief sketch.

James King Hall, the seventieth President of The American Psychiatric Association, was born near Statesville, in Iredell County, North Carolina, on September 28, 1875. He was one of the six children of Dr. Eugenius A. Hall and Amanda McCullough Howard White. The mother, whose maiden name was Howard, was a war-widow of the Civil War. Lieutenant Joseph C. White gave his life in a charge at Seven Pines, near Richmond. That heroic tragedy widowed the wife who was scarcely more than a girl, and left fatherless the infant daughter who eventually went as a bride and a pioneer to a ranch on the plains of Wyoming. She has sent her grandsons into the greatest of all wars. Dr. E. A. Hall, the father of our President, was, likewise, a Confederate soldier. Although he had left half a hand on the field of First Manassas, he entered upon the study of medicine within a few months after Appomattox. He gave his medical services for almost two generations to the people amongst whom he was born. Although he lived the hard life of a country doctor, he had almost reached the age of ninety before death came upon him. Of his two brothers, one was killed in battle; and the other survived into old age the passage in the battle of a bullet through his neck.

The father of Dr. E. A. Hall was Hugh R. Hall, a classical school teacher prior to the Civil War. The school teacher's grandfather, James Hall, had married Prudence Roddy, in Pennsylvania, and in 1751 they migrated from the region near Harrisburg and established their home in what is now Iredell County, North Carolina. Considerable acreage was transferred by grant from the Earl of Granville to James Hall, the pioneer. I believe our President, Dr. J. K. Hall, takes good care both of the grant and of the homesite of his great-great-grandfather, James Hall, the Scotch-Irishman, who first made his home in Pennsylvania, and later established himself in Piedmont, North Carolina.

From James Hall and Prudence Roddy have come many descendants. Many of them have been teachers, physicians, and ministers, but few of them lawyers and almost none of them holders of public office. The mother of our patron saint, Dr. Benjamin Rush, was Susanna Hall. Our President may be wondering if he may not be akin to that great physician of Revolutionary days.

Dr. J. K. Hall's earliest schooling was had at the feet of stern, Calvinistic tutors. Although he thinks his preparation for college was inadequate and uneven, yet he was graduated from the University of North Carolina in 1901 *magna cum laude,* and he became a member of Phi Beta Kappa. He had interests outside the curriculum. He was

a member, for example, of the reportorial staff of the college weekly, and in his senior year he was editor of the University magazine. Occasionally he participated in a college debate. At the end of four years he was not only a Bachelor of Arts but he had taken, also, the first year in medicine. He thinks he might have been given a Master's degree if he had submitted a thesis. He had little time for athletics, but for a year he was President of the Athletic Association.

He returned after graduation to the University of North Carolina for another year in medicine. He and a fellow-student tied for the prize in anatomy. During that year he was an assistant in the Department of English. He was graduated in medicine from the Jefferson Medical College in Philadelphia in 1904, and for a year and a half afterwards he served an interneship there in the Polyclinic Hospital and College for Graduates in Medicine.

As an interne Dr. Hall had considerable experience in surgery, and he probably felt inclined to devote his life to that branch of medicine; but as under-graduate student and as interne he had at least the opportunity for an introduction to what has become known as psychiatry and to neurology. For, at the Jefferson Medical College, half a century ago, so-called nervous and mental diseases constituted one of the major offerings, and Dr. F. X. Dercum, who taught those branches, was one of the well-known specialists of Philadelphia. And clinics in mental diseases, which students at Jefferson must attend, were regularly held at Old Blockley, and patients exhibiting the major psychoses were presented by the leading psychiatrists of the city, and their conditions were discussed in detail. And the clinic of Dr. William G. Spiller in neurology at the Polyclinic Hospital must have impressed the young interne, for Dr. Hall's admiration for Dr. Spiller was profound and sustained. Dr. Spiller has always symbolized to Dr. Hall the persistent searcher after truth.

As the conclusion of his interneship approached Dr. Hall was put to it to know what to do. Lack of financial resources made it difficult for him to contemplate establishing himself in practice. Altogether unexpectedly, he was offered membership on the medical staff of the State Hospital at Morganton, North Carolina. He reported for duty immediately, in midsummer, 1905.

That Hospital had been opened in 1883 by its first Superintendent, Dr. Patrick L. Murphy, an exceedingly able organizer and administrator. Under the tutelage of Dr. Murphy, Dr. Hall had every encouragement to devote himself unremittingly to the new branch of medicine that was soon to become known as psychiatry. Dr. Murphy was eager always to supply the few young men on his medical staff with facilities for the comprehensive study of mental disorders. He was determined that opportunities that had been denied him should be made possible for them.

Dr. Hall spent his vacation periods and such other leaves as he could obtain in studying in some of the large mental hospitals, especially in New York. He realized vaguely, perhaps, at first, that his mentally sick patients were out of tune with their individual lives. He was deeply interested in their physical conditions. He made and recorded his examinations of their bodies as well as of their minds. His copious notes upon the condition of a young man who was dead within two or three weeks are almost of prophetic interest. Dr. Hall eventually realized that the young man's condition was not at all understood by him; but as soon as Dr. Searcy reported his observations about pellagra, in 1907, Dr. Hall instantly sensed that his patient of the year before had died of pellagra. In the State Hospital at Morganton Dr. Hall saw many patients die of pellagra and some recover from the disease. He did such research work as he could in pellagra. He and his fellow-assistant, Dr. P. V. Anderson, afforded Dr. William G. Spiller the tissue from which he reported in the American Journal of the Medical Sciences perhaps the first pathologic work on pellagrous tissue done in this country.

While Dr. Hall was at work in the State Hospital the prevalence of hook-worm infestation in the South was discovered. He probably searched hundreds of fecal specimens for hook-worm ova in the dead hours of the night when the world was wrapped in sleep. Called once into consultation about an unusual skin condition in a child in the School for the Deaf, he promptly made a

diagnosis of ainhum, a condition rare outside of the tropics; but he had not forgotten the two or three patients with the disease that he had seen as a student in Philadelphia.

Dr. Hall has insistently believed that even the dement is entitled to all that medicine can give. When it became impossible to induce a surgeon to proffer relief to one of his patients who suffered from recurrent rectal prolapse, he devised an operative procedure, and he obtained Dr. Murphy's permission to perform the operation. I believe he reported the condition and the operation with illustrations. The patient's cooperation was rewarded by permanent relief.

Probably long before he was altogether conscious of his purpose, Dr. Hall must have decided, not long after reaching the State Hospital at Morganton, to devote his life to the study of mental disease and to the treatment of the mentally sick. He was tempted by an offer to return to the University of North Carolina as a member of the faculty of the medical school, and offers came to him to engage in private practice; but he had evidently put his hand to the plough and he would not remove it.

In 1911, with two associates, Dr. Paul V. Anderson and Dr. E. M. Gayle, Dr. Hall participated in the organization at Richmond, Virginia, of Westbrook Sanatorium. The undertaking involved the purchase of the larger portion of the country estate of the late Major Lewis Ginter, a successful business man, who became one of Richmond's great benefactors. In coming into Virginia relative strangers, with small material resources, the three young physicians exhibited no little courage and no small degree of resourcefulness. They attended to their duties; they cared for their patients, and they made themselves professionally well known by their skill.

James K. Hall has helped to make psychiatric history in the South. He has always tried, as Mark Antony said, to live within his patient's bosom in an effort to understand the feeling and the thinking of the mentally sick person. He has recorded much of the speech of many of his patients, and he has tried to make out what the speech meant. He is innately studious. He probably does not believe in accidents, but in cause and effect, and he may believe that the so-called irrational speech of the maniac represents the mental state of the patient. He probably thinks of himself as stupid, or, at least, as unfortunate, in being unable to understand the full meaning of such speech. He spends his days in an effort to know how the patient feels and what the patient is thinking.

He believes in putting his own ideas, and sometimes his lack of ideas, into words. Such a procedure, he says, makes what he thinks he knows objective, and it makes his lack of knowledge exceedingly obvious. He holds that writing tends to clarify and to dignify thinking. He has respect for language as one of the mighty instruments made use of by man. He is fond of words. He likes to know about them; their ancestry; the lives they have lived, and the differences between words that are even close akin.

Dr. Hall insists that mental sickness, in all of its aspects, belongs within the domain of modern medicine. He believes that the mentally sick are worthy of the best that medicine has to offer, and that quacks and humbugs should not be permitted to lay their hands upon them. He knows that mental sickness, with its varied symptomatology, is no more difficult to understand than hepatitis or nephritis.

He is doing much, especially in the South, and he has been at it for years, with his voice and with his pen, to help physicians and lay people, also, to believe that sickness of the mind can be understood, sometimes prevented, and often successfully treated. He writes simply, usually without resort to the use of medical language, and his style makes appeal. Perhaps no other physician in the South has done with his pen more for mental hygiene than Dr. Hall. He has spoken before many groups, lay and medical, and his messages have always aroused interest, and they have tended to dignify the thought about so-called insanity. I know of no other physician from whose pen have gone out so many reprints dealing with so many of the phases of mental disease. For years Dr. Hall has contributed a column in *Southern Medicine and Surgery* under the caption: "Human Behaviour." He is an Associate Editor of *Diseases of the Nervous System*. His con-

tributions possess a distinction and a charm unusual in medical literature. He reads omnivorously, in medicine and out of it, and his writing reflects the scope and the depth of his interest. He probably believes that the physician should place no limitations upon the range of his mind, and that the psychiatrist, especially, should concern himself about man and about all that man is concerned about.

Dr. Hall has enjoyed and has undoubtedly been inspired by his quiet but intimate communion with a number of the leading medical men of his day. He and the late John Chalmers Da Costa, the brilliant and highly individualistic teacher, writer, and surgeon of Philadelphia, carried on for many years a correspondence that must have been stimulating and comforting to each of them. Dr. Hall has written appealingly about the late Dr. William A. White; Dr. William G. Spiller; Dr. Patrick L. Murphy, and reminiscently about his life in the State Hospital at Morganton; about the late Dr. Isaac M. Taylor; Dr. Albert Anderson; Dr. C. A. Shore; about the gifted and much beloved Dr. Cyrus Thompson; Dr. W. F. Drewry; Dr. A. S. Priddy, and Dr. Paul B. Barringer. At the dedication of the new medical building at the University of North Carolina he wrote in deep appreciation of the lives of Dr. Richard H. Whitehead and Dr. Charles S. Mangum. To his fellow-alumni of the Jefferson Medical College he spoke a few years ago about that College and its historic associations with the South.

Without political connections and perhaps without political understanding, he was, nevertheless, by appointment of one Governor and re-appointment of two others, a member of the General Board of Directors of the State Hospitals of Virginia from 1923 to 1935. As the psychiatric member of this Board he influenced to a large degree its policies and he was able to infuse new life into the service. Under his direction, encouragement was given to the medical staff members to attend both state and national medical meetings, and it was made possible for many of them to visit hospitals of other states. His interest in young physicians attached to state hospitals has continued unabated, and it has manifested itself markedly during his incumbency as President of this Association. He has visited more hospitals, perhaps, than any previous President, and, by personal contact and otherwise, he has done much to impress the young hospital physician with his psychiatric obligations and privileges.

No stranger in the Criminal Courts, Dr. Hall has little patience with the "hypothetical question" and, though not speaking the lawyers' language, he has always managed, in some fashion, to get before the jury what he thought about the prisoner or the issue. He has spent much time in jails with prisoners. He is disinclined to offer an opinion about a prisoner's condition until he has obtained it in that way. And sometimes, perchance, he may reveal to the court, the bar and the jury evidence that he is familiar with their own mental processes.

Dr. Hall was among the first of his contemporaries in the South to break away from the old static psychiatry. He did not elope with any particular school of thought, but he has examined critically what each had to offer. He is joined to few, if any, idols, nor is he a runner after strange gods. Yet he is essentially progressive and a searcher after new and better ways.

It may be said of him generally that he has always been dissatisfied with things as they are. May we not find, perhaps, in a study of his restless and pioneering ancestors, some explanation of the manner of man whom the Association has honored by electing him as its seventieth President?

Dr. Hall is a member of the American Medical Association; the American Association on Mental Deficiency; the American College of Physicians; the American Academy of Political and Social Science; the American Association for the Advancement of Science; the National Committee for Mental Hygiene. He has been a Member of the Committee on Ethics of the American Psychiatric Association. He is now President by re-election of the National Association of Private Psychiatric Hospitals. He is President-Elect of the Southern Psychiatric Association. Dr. Hall is past President of the Tri-State Medical Association of the Carolinas and Virginia. He has been President, also, of the Richmond Academy of Medicine. He was a member

of the Building Committee of the Academy, and he served as the first Chairman of the Section on the History of Medicine in the Academy. He was once Vice-President of the Medical Society of Virginia and once a member of its Legislative Committee. He was once consulting psychiatrist of the State Department of Public Welfare. For many years he was Chairman of the Governor's Advisory Board on Mental Hygiene. In that capacity he devoted much time to the examination of prisoners in the State Penitentiary. He is a member of the Southern Medical Association; of the Central Neuropsychiatric Hospital Association; the Neuropsychiatric Society of Virginia and the Virginia Academy of Science. He is an honorary member of the Medical Society of the State of North Carolina and of the North Carolina Neuropsychiatric Association. He is a member of the North Carolina Historical Society. The University of North Carolina conferred upon him in 1935 the honorary degree of LL. D.

Not even his inheritance and the diligence of his labors can wholly account for him. Fortune has been kind to him, chiefly so in blessing him with such a wife. He and Laura Witherspoon Ervin, of Morganton, North Carolina, were married on February 29, 1912. She has mothered him three splendid sons—James King, Jr., Dorman Thompson, and Samuel Ervin, who, one by one, have volunteered in the defense of our country. His wife possesses the graces that are associated with all that is best in womanhood, and the sprightliness of her intellect must constitute a factor in his success. When the emergency disrupted things as they had been, she took up again her pencil and her note book, and she turned again to the typewriter. From her nimble fingers have come to us the letters from our President manifesting his personal interest in us, and expressing the hope that as many of us as possible might attend the annual meeting of our Association.

What words and wisdom the President's address may carry no one will know until he proclaims it, but those of us who know her can assure you that she has given it typographical form. We could tell you, too, that she could have given the Presidential deliverance content as well as form. No small portion of the success of the annual meeting will be due to her inspiration as well as her industry.

THE PROBLEM OF SOCIAL CONTROL OF THE CONGENITAL DEFECTIVE

Education, Sterilization, Euthanasia [1]

FOSTER KENNEDY, M. D., F. R. S. E., New York, N. Y.

It is not easy to know how to start a talk on such a subject as this, for this subject has to do with the whole of life and death. Three things we may lay rough hands on, with little enough knowledge how to do it: man's life now, his reproduction of himself, and his evolution, which is the way he is to go. There are indeed many feebleminded people not easily recognizable at first sight in the social world. But in their higher grades they are greatly needed for the simpler forms of work. They are necessary for the work of the world. It would be improper, I am sure, for their disposal to lay down any such arbitrary law as has come into existence in Germany by dictatorial method. Were we to try to sterilize all the abnormal, I am sure that we would defeat the evolution of the higher life.

Mankind has got to where he is, because at every cross-road on his phylogenetic path, he has refused to be seduced to specialism. We can do something of everything. We can see, but not as well as an eagle. We can swim, but not as a fish. We jump, but less than a cat. We have refused to specialize, and by doing only a little of everything, we are free to think of much.

Were we to begin to breed eugenically in terms of our small knowledge, we would have to specialize in our objectives. We would have to specialize in the making of human beings, and then for what quality would we breed? We might breed for courage and defeat compassion; for self-discipline and defeat flexibility; for strength and lose thought. Humanity implies them all.

Only once was infanticide practiced universally by a State: in Sparta. The Spartans were perfect, but as a pack of wolves is perfect—each one like to the other. But the glory of Greece did not come out of Sparta. It came from the disorderly democracy of Athens. One must be careful when thinking of totalitarian ideas on the sterilization of the unfit. Their theories appeal quickly to rigid, shallow minds that lack pity. The dictators are a passing phenomenon and they know it. We who remain to make a better world must take a longer and a wider view.

Consider for a moment the two diseases that so largely fill our mental hospitals; schizophrenia and manic-depressive psychosis. Under Nazi law, such sick folk are sterilized to produce just middling people; but I am sure that the thought and ambition of mankind is not advanced by the great bulk of mankind. It goes forward by the brilliant jump of the few, the drive of the person especially endowed; he it is who lifts the rest. It is certain that these brilliant few number among them a large portion of psychasthenics, of mentally-phasic individuals, who, isolated during their depression, then emerge to startle the world with their inventions, and by their ingenious ability raise their more pedestrian fellows.

Were we to wipe out the manic-depressive psychoses—which exist, of course, in all kinds of grades—I am sure that we would make a great happiness for the present and in the second generation; but we would produce a population of Babbits, of mediocrities, capable of pushing but not of leaping; and it's the leap that counts.

On the other hand, we have too many feebleminded people among us, something like 60,000, I think, in the hospitals of this country, and perhaps five times that number are outside. The idiot and the imbecile seem to me unresponsive to the care put upon them. They are not capable of being educated; nor can such defective products ever be made to be so. Good breeding begets good brains; with no good brains there can be no good mind.

A "moron"—an old fashioned term—with a mental age of eight or nine *can* be

[1] Address at a luncheon sponsored by the Devereux Schools during the ninety-seventh annual meeting of The American Psychiatric Association, Richmond, Virginia, May 5-9, 1941.

educated within the frame of his endowment; he should be taken care of in an institution and taught simple manual work; few books, no abstractions, no general principles. He can be trained to do useful work, to be self-supporting, though often only within the framework of an institution. But if he can de diagnosed; if we be certain he is "feebleminded," if he come out of feebleminded stock, then it will be wise to sterilize him if he is to be allowed abroad.

What to do with the hopelessly unfit? I had thought at a younger time of my life that the legalizing of euthanasia—a soft gentle-sounding word—was a thing to be encouraged; but as I pondered, and as my experience in medicine grew, I became less sure. Now my face is set against the legalization of euthanasia for any person, who, having been well, has at last become ill, for however ill they be, many get well and help the world for years after. But I *am* in favor of euthanasia for those hopeless ones who should never have been born—Nature's mistakes. In this category it is, with care and knowledge, impossible to be mistaken in either diagnosis or prognosis.

I believe when the defective child shall have reached the age of five years—and on the application of his guardians—that the case should be considered under law by a competent medical board; then it should be reviewed twice more at four-month intervals; then if the Board, acting, I repeat, on the application of the guardians of the child, and after three examinations of a defective who has reached the age of five or more, should decide that that defective has no future nor hope of one; then I believe it is a merciful and kindly thing to relieve that defective—often tortured and convulsed, grotesque and absurd, useless and foolish, and entirely undesirable—of the agony of living.

But many may say: "But these creatures have immortal souls." To them I would answer, in all respect and reverence, that to release the soul from its misshapen body which only defeats in this world the soul's powers and gifts is surely to exchange, on that soul's behalf, bondage for freedom.

Others will contend further, that this proposal would bruise and shock the feelings of the parents of these children in whom there is not mind enough to hold a dream to live by; nor a hope either of normal release. To them I reply: even now, when society has not yet advanced enough in humane thinking to make this beneficence of social good repute, to make it a usual and natural proceeding—parents of defective children appeal to us doctors again and yet again that their unhappy offspring be mercifully released from life. When I first wrote on this subject my mail was filled with letters from all parts of this country carrying sad pleas to which the law and the social mores could provide no answer.

A while ago there came a man of forty bringing his idiot girl of four, unable to sit up or speak. She would follow a light and look toward a sound, and that was all. The heart and lungs and digestion were perfect. With such care as he gave her, she might live seventy years. The mother's absence from the clinic was explained by her having had to go back to work, for she could make more on full time for the household than could her carpenter husband who could only get work three days a week. So they'd swapped jobs and he—flabby in body and dulled in spirit—stayed home to mind what he called "the baby."

Asked if a neighbor woman couldn't help him, he said quite simply and without resentment, "No, they won't touch an idiot." He'd tried to find full-time work but in his search he had to take the child along with him—and, "When they see the look of her, there's nothing doing."

So these fine folk are hopeless and on a cleft stick. It was possible to set them in the way of eventually having their futile burden taken care of in a charitable place, but they'll feel their contribution must always be paid, and on all their holidays and Sundays these two people will lower their value to each other by trudging wearily to see, without benefit to any, what should not be seen at all.

But for the normal adults, who having become ill, are going down into the shadows: I refuse. Many kindly doctors in their private capacity, in benign relationship of doctors and patient, may assuage and hasten the journey's end; but to legalize such euthanasia may put a weapon in the hands

of wicked men, or, worse, a tool in the hands of the foolish.

Furthermore, our knowledge is not enough to warrant such legalistic formal pomposity. I have many instances in my own experience of seemingly fatally ill persons who for years after, lived useful lives. I remember a distant relation of my own, an old woman seventy-two or seventy-three years of age, of austere character and strong intellect. There grew in her a large mass evidently connected with the liver. I was present at the consultation as *amicus curiæ,* a friend of the family. She was in the hands of one of the best doctors in New York and one of the best internists, as consultant, was asked also to see her.

After the examination, the old lady came down, looked sharply at the three of us in her characteristic way, like an American eagle, leaning on her ebony walking stick, and said, "Well, what is it?"

No one spoke. She said, "Cancer?"

The consultant bowed his head. She pursed her lips.

"How long? Six months?"

He bowed his head. So then she said, "Well, gentlemen, I think that is all there is to say." We found ourselves sheepishly on her doorstep.

So she put her affairs in order, made plans for her little property, and left New York for her country house, there to die. Then she got steadily better. Better and better, and fatter and fatter, and at last the November snows drove her back to town. She reopened the little house in 12th Street. I went down to see her and asked, "Ma'am, how are you?"

She said, "My boy, it is most disconcerting, when I've made arrangements for the next world, to have to engage servants for this."

She lived five years more; I was with her when she died of an apoplexy. The enlargement of the liver was by that time thought to be a senile dysfunction of this organ, which, in its train brought her five years of very, very painful and difficult arthritis, crippling her greatly for those five years; but her mind remained the same sharp sword it had always been. That woman would have scorned to have defeated herself of five years of life and helpfulness to avoid thereby the misery of her painful joints.

I could add to this case scores of others. It is unwise, I am sure, to advocate the legalizing of euthanasia for any of us normals; besides, a civilization that deliberately shuts itself off from the bearing of pain and the presence of struggle and finally makes its bid for the softer life or death, is already slipping down the ways. To do this is a sign of degradation and defeat.

So the place for euthanasia, I believe, is for the completely hopeless defective: nature's mistake; something we hustle out of sight, which should never have been seen at all. These should be relieved of the burden of living, because for them the burden of living at no time can produce any good thing at all. They can never have the joy of work nor the joy of play and, for many of them —perhaps the defective dystonias—even the placidity of the vegetable world. For us to allow them to continue such a living is sheer sentimentality, and cruel too; we deny them as much solace as we give our stricken horse. Here we may most kindly kill, and have no fear of error.

May I, before I close, quote as regards sterilization, an opinion of the late Mr. Justice Holmes of the Supreme Court? He was speaking of the sterilization of the supremely unfit:

> We have seen more than once that the public welfare may call upon the best citizens for their lives for the use of the State. It would be strange, if it could not call upon those who have already sapped the strength of the State, for these lesser sacrifices, often not felt to be such by those concerned, in order to prevent our being swamped with incompetents. It is better for all the world if, instead of waiting to execute degenerative offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind. The principle that sustains compulsory vaccination is broad enough to cover the cutting of the fallopian tubes.—Three generations of imbeciles are enough.

Now, the Law is the garment of our social body. A garment which must grow and shrink with the growth or reduction of us it covers. On our body, sometimes it constricts; as it did during the years of prohibition. In that silly period we allowed a

law that drove down on the organism so much that the organism had to cut its way out. However, should the social organism grow up and forward to the desire to relieve decently from living the utterly unfit, sterilize the less unfit, and educate the still less unfit—then the Law must also grow, along with the amplitude of our new ideas for a wiser and better world, and fit the growing organism easily and well; and thereafter civilization will pass on and on in beauty.

EXONERATION OF THE FEEBLEMINDED[1]

LEO KANNER, M. D., Baltimore, Md.

It seems that man's need for self-assurance has always prompted him to look down with contempt or contemptuous pity on those whose disadvantages or misfortunes he did not happen to share. Disease, in civilizations past, was regarded as deserved punishment from the gods for evil deeds or thoughts. Poverty was judged as a disgrace visited upon people lamentably unfit to accumulate wealth. It was so heartening to be able to say to oneself: I am not a pariah, an epileptic, a leper, a lunatic, a pauper, the member of a group which it makes me comfortable to deem inferior to mine.

The influence of humanitarian concepts, aided by scientific progress, has succeeded in removing some of these prejudices. It has managed to change some objects of scorn and intolerance to objects of mere tolerance or even of full acceptance. But it did not, and could not, change human nature. It did not eliminate the need for self-assurance through contrast. This is why the democratic ideal is still struggling for its very existence. People still find it convenient to feel holier than thou, better, stronger, superior in origin, rank, achievement or ability.

Ability, in a culture centered predominantly on cognitive performance, means capacity for competition in the intellectual sphere. Our educational system, our vocational hierarchy and our economic scheme are constructed primarily on the requirement of conceptual cleverness. A reasonably high I.Q. is the admission ticket to anything that is viewed as "success" in our society.

In such a setting, individuals who are less endowed with the potentialities represented by the intelligence quotient go through life with a double handicap. Their limitations inevitably impose on them a restriction in the number and nature of attainable goals. And these same limitations also impose on them, less inevitably but just as surely, a cultural verdict which gives them a minus quality in the attitude of their fellow men. It is an attitude which says, in effect: I, by the grace of God, by virtue of inheritance, and because of other favorable circumstances, am the lucky possessor of a good I.Q. Whatever you and I may have in common, in terms of intelligence I am one of the Haves, and you are one of the Have-nots. Therefore, I am superior and entitled to the better things in life.

Thus the universal need for self-assurance by contrast has another, easily accessible source of satisfaction in the distribution of invisible dunce caps. Spinoza, who was well aware of this need, said: "He that can carp in the most eloquent or acute manner at the weakness of the human mind is held by his fellows (and we might add, by himself as well) as almost divine."

It is hardly believable, though it is true, that even some of our modern psychiatric clinics display a peculiarly haughty indifference toward the feebleminded. These units, set up to serve their communities with regard to all their psychiatric problems, have in some places developed the habit of refusing to deal with the difficulties of the intellectually inadequate. The door is closed to a sizable number of children because they are not suited for the particular variety of psychotherapy in which the clinic happens to specialize.

In an excellent, recently published book on the clinical treatment of the problem child, the author, Carl R. Rogers, in reviewing the current varieties, reported that "in general it has been felt that below the average range children do not respond particularly well to psychotherapy," that for them psychotherapy is not "a feasible or possible technique." The crux of the matter lies in an attitude that, with a sort of pseudo-aristocratic aloofness, monopolizes and monotonizes the concept of psychotherapy, which is trimmed down to a specific approach, method or technique. To most of us, who have no desire to constrict our fields of vision and activity, psychotherapy connotes the help given to a person, to *any*

[1] Read at a luncheon sponsored by the Devereux Schools during the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

person, who needs help, comes for help, is brought or referred to us for help. Once a clinic has narrowed its scope and functions to any one secluded, repetitious procedure, those to whom the procedure is not applicable must of necessity be left out in the cold. They are "rejected" by the clinic. What about rendering assistance to the retarded child? Well, let George do it! *We* cannot be expected to stoop to the menial jobs which do not involve the supremacy of attitude therapy, release therapy, relationship therapy, analytically or otherwise interpretive therapy. *We* can suffer only the intelligent children to come unto us; *we* will have no truck with the feebleminded. *Our* time and *our* skill are too valuable to be wasted on the feebleminded.

But is there such a thing as "the feebleminded"?

"Feeblemindedness" and "mental deficiency," in spite of existing gradations, are terms used very much in the manner of clichés, somewhat reminiscent of the designations "insanity" and "lunacy" as they were applied in the days of yore. In those days, extending far into the nineteenth century, the insane were dealt with as if they were a homogeneous group. It was legitimate then to make and publish studies of the pulse rate of the insane, the blood pressure of the insane, the gastric motility of the insane. An individual was, and in the practices of contemporary jurisprudence still is, either sane or insane. The fallacy of homogeneity was successfully dispersed by Kraepelin, Bleuler and a few of their immediate predecessors. The fallacy of categorical absoluteness was properly abandoned under the influence of men like Kretschmer, Freud and Meyer, who introduced to psychiatric thinking a wholesomely individualistic and relativistic orientation. Insanity as a generic term has departed from the vocabulary of psychiatrists, except when, much to their discomfort, they are forced to choke on it in the courts of justice and in legal commitment papers.

Feeblemindedness and mental deficiency, however, still persist as generic terms. From the point of view of cultural semantics, it is exceedingly interesting to note that "mind" and "mental" are made to refer primarily to the intellect. The emphasis on cognition is carried through when we unhesitatingly speak of mental tests and mental ages in alluding to the evaluation of cognitive performance.

This habit has resulted in peculiar distortions.

There is the garbage collector's assistant who has served our neighborhood for many years. He is a sober, conscientious and industrious fellow, who uses his pay checks for the needs of his household. He is deservedly respected by his employer, his coworkers and his spare time companions. He is a good husband and father. Yet, with an I.Q. of 65, he is rated by us psychiatrists and psychologists as feebleminded or mentally deficient.

There is, on the other hand, the handsome, dashing, reckless blade who has driven his parents frantic with his alcoholism, debts and amorous adventures, has made his wife miserable, has deserted her and their offspring, has not done a single thing that can be regarded as socially useful, and does not even respond to the fanciest brand of psychotherapy. We may call him all sorts of names, we may bestow on him the title of constitutional psychopath; but with an I.Q. that nearly hits the ceiling, he receives from us the honor of being considered as "mentally" superior.

Of course, I know that there is nothing new or original in making the contrast. But it does illustrate the ease with which we are ready to identify mind with tested intelligence. It does show how we, the intellectual Haves, instinctively sense greater kinship with the unstable young blade, another Have, than with the garbage collector's assistant, an intellectual Have-not. And it gives one an acute pain to realize that, if we had the kind of rigid sterilization laws advocated by some of our eugenicists, they would be applied to the collector's assistant and not to the blade. Some of the high-minded child guiders would not be interested in helping a low I.Q.'d garbage-collector-in-the-making when he staggers under the strain of memorizing the multiplication table or the exploits of the Phœnicians on the Mediterranean Sea. But they would fall over them-

selves to release, relate or analyze the blade *in statu nascendi.*

It is because of such obvious inconsistencies that the best students of the subject have always struggled for a satisfactory definition of mental deficiency. In one of the latest issues of the American Journal of Mental Deficiency, Yepsen, Kuhlmann and Doll, certainly three of the country's outstanding authorities, have each in a separate article stressed the need for clearer delimitation than has been hitherto achieved. Surely, the fictitious notions of homogeneity and absoluteness must be exploded once and for all, as they have been exploded in the field of psychotic manifestations.

For one thing, we have been accustomed to lump together as mentally deficient—or oligophrenic, if you wish—two widely differing groups of persons who can and must be distinguished by one criterion of major practical as well as theoretical significance.

The one group consists of individuals so markedly deficient in their cognitive, emotional and constructively conative potentialities that they would stand out as defectives in any type of existing human community. This group comprises all those whom we designate as idiots and many of those whom we designate as imbeciles. They would be equally helpless and ill-adapted in a society of savants and in a society of savages. They are not only intellectually deficient, but deficient in every sphere of mentation.

The other group is made up of individuals whose limitations are definitely related to the standards of the culture which surrounds them. In less complex, less intellectually centered civilizations they would have no trouble in attaining and retaining equality of realizable ambitions. Some might even be capable of gaining superiority by virtue of assets other than intellectual. They could make successful peasants, hunters, fishermen, tribal dancers. They can, in our own culture, achieve success as farm hands, factory workers, miners, waitresses, charwomen. But in our midst their shortcomings, which would remain unrecognized and therefore nonexistent in the awareness of a more primitive cultural body, appear as soon as scholastic curricula demand competition in spelling, history, geography, long division and other such essential preparations for the tasks of feeding chickens, collecting garbage and wrapping bundles in a department store. In our midst, also, occupations available to people of limited schooling have low ratings in remuneration and public esteem.

The members of this second group are not truly and absolutely feebleminded or mentally deficient. Their principal shortcoming is a greater or lesser degree of inability to comply with the intellectual requirements of the community. In other respects, they may be as mature or immature, stable or less stable, placid or moody as any other member of the human species. Their apparent deficiency is an ethnologically determined phenomenon relative to the local culture and, even within the culture, relative to educational postulates, vocational ambitions and family expectations.

It does not seem right to label these individuals as mentally deficient, together with the idiots and imbeciles. A number of years ago, I made this plea, in my textbook of Child Psychiatry: "We prefer to speak of *intellectual inadequacy* for several reasons. We feel that one is not quite justified in limiting the term 'mental' too narrowly to the cognitive functions only. The emotional and conative functions are certainly not less mental. 'Deficiency' fails to convey the ideal of relativity; 'inadequacy' permits the highly important question: Inadequate for what? A person with an I.Q. of 85 may be, and surely is, not fit to occupy the chair of professor of economics but well suited to dispense articles in a Five and Ten Cent Store. One with an I.Q. of 75 may not even be capable of doing that but may well be trained to usefulness as a cog in the wheel of the industrial Taylor System. And one with an I.Q. of 60 may learn to milk cows and wash dishes satisfactorily. 'Intellectual inadequacy' therefore allows a more melioristic attitude than 'mental deficiency.' "

A few months ago, the National Resources Planning Board of the United States Civil Service Commission sent out a questionnaire to psychiatrists, together with an itemized list of interests and experiences to be checked by the individual specialists. It was highly gratifying to me to note that in this

list a definite distinction was made between mental deficiency and intellectual inadequacy. The mental defectives in the true sense of this word have decidedly no place in the war efforts of our country. But the majority of the intellectually inadequate can very well be integrated in the defense industries and, to some extent, even in the armed services.

But, distinction or no distinction, there are people who, however well-meaning, assume the rôle of self-appointed guardians of the collective intelligence of the nation. These people are sorely vexed by the existence of persons who are ignorant of the three main differences between a president and a king, unable to identify the words depredation, ambergris, promontory and homunculus, and incapable of telling in what way a knife blade, a penny and a piece of wire are alike. They view with alarm the fact that individuals with lower than average test scores, especially when they are not even borderliners, mar the appearance of their towns because they cannot inhabit residential district homes, do not contribute to fraternal organizations, and have no appreciation of Proust, Picasso and Sibelius. We, these people feel, bear the brunt of taxation. We make donations to the community chest. We are entitled to the necessities and the luxuries of life because, thanks to our I.Q.'s we are able and privileged to afford them. But why should a portion of our earnings go to those who, with miserable wages, have the effrontery to bear children whom *we* must educate, who, at the slightest economic dislocation, become dependent on us for food and clothes and shelter?

Out of such feelings arises a cry which resounds through the land, a cry of impatience and serious accusation: The feebleminded are a drag on society. The feebleminded hamper the progress of civilization. Something ought to be done about this. We cannot allow such a deplorable situation to continue indefinitely.

Let us examine these charges leveled at a large minority of our country's population, at many millions of the world's population. Let us try to recall one single instance in the history of mankind when a feebleminded individual or group of individuals was responsible for the retardation or persecution of humaneness and science. They who caused Galileo to be jailed were not feebleminded. They who instituted the Inquisition were not mental defectives. The great man-made catastrophes resulting in wholesale slaughter and destruction were not started by idiots, imbeciles, morons or borderliners. The one man, Schicklgruber, whose I.Q. is probably not below normal, has in a few years brought infinitely more disaster and suffering to this world than have all the innumerable mental defectives of all countries and generations combined.

You might want to point out that the absence of a vice is not necessarily in itself a virtue. You might say that, though the intellectually inadequate have not done anything to destroy civilization, they have not in any way contributed to it actively.

I am not at all sure that this is true. Sewage disposal, ditch digging, potato peeling, scrubbing of floors and other such occupations are as indispensable and essential to our way of living as science, literature and art. Cotton picking is an integral part of our textile industries. Oyster shucking is an important part of our seafood supply. Garbage collection is an essential part of our public hygiene measures. For all practical purposes, the garbage collector is as much of a public hygienist as is the laboratory bacteriologist. All such performances, often referred to snobbishly as "the dirty work," are indeed real and necessary contributions to our culture, without which our culture would collapse within less than a month.

But this is not the whole story. The fortunate fact that people, regardless of I.Q., are available for these performances frees the time and energies of others for tasks which involve planning and creative activities. This is what makes the so-called psychometric and aptitude tests so valuable. The tests make it possible to assign people to the particular, neither superior nor inferior, but intelligently gauged types of education and vocation for which they are suited. A well organized society will try to allocate its variegated functions in accordance with the specific use it can make of

its individual members. The more nearly the intellectually inadequate can be prepared for and assigned to jobs for which they are fitted, the more occasion is there for the intellectually more adequate to make corresponding use of their cognitive assets.

Can we not then in all fairness reverse the accusation? Can we not then say: The feebleminded are a drag only on a society which forces them to be a drag on it, which, in fact, is at least as much of a drag on them?

It is true that those of whom we spoke as absolutely deficient, the idiots and imbeciles, cannot be trained in any kind of social usefulness. Are we then justified in passing the black bottle among them? Some people have suggested just such a procedure, which they dignify with the term euthanasia. An idiotic child may have fond parents who want him alive, even if it were in a distant institution. But why, say the advocates of euthanasia, should we allow ourselves to be sentimental about fond parents? Idiots have no social value; they are a drain on the taxpayer's pocketbook. Ergo, off with their heads!

If William Shirer's report is true,—and there are reasons to believe that it is true,—in Nazi Germany "the Gestapo is now systematically bumping off the mentally deficient people of the Reich. A trustworthy German has estimated the number of 100,000. I believe the figure too high, but certainly it runs into the thousands. . . . . The letters sent to relatives of 'mercy-killing' victims reflect the (underlying) sociological thinking—'In view of his incurable ailment, his death is to be regarded as a release.'"

Psychiatry is, and should forever be, a science dunked in the milk of human kindness. Shall we psychiatrists take our cue from the Nazi Gestapo? Does anyone really think that the German nation is in any way improved, ennobled, made more civilized by inflicting what they cynically choose to call mercy deaths on the feebleminded?

Nobody, not even the Nazis, have thought of bumping off those whose I.Q. promotes them to the rank of morons. For them we have reserved the expedient of sterilization. The feebleminded, so goes the reasoning, beget other feebleminded. This must be prevented and, if all goes well and if the sociological reactionaries do not interfere, our grandchildren or great-grandchildren will wake up some day to find themselves in a delightful world populated by none but intelligent contemporaries.

Sterilization is often a desirable procedure. Much neglect and ill-treatment of children would be forestalled if persons intellectually or emotionally unfit to rear children could be sterilized. But it is unfair discrimination to decree such a measure solely on the basis of the I.Q. Thus far we know precious little about the laws of heredity. But even if it were true that every person with a low I.Q. begets offspring with low I.Q.'s, do we really wish to deprive ourselves of people whom we desperately need for a variety of essential occupations? If we decided to annihilate the intellectually inadequate today, we would experience a disaster compared to which the present world-wide holocaust would seem like a trifle.

Let us leave the cotton pickers, oyster shuckers and bundle wrappers alone, regardless of their I.Q., so long as they are industrious and good natured! Let us think, when we recommend sterilization, of individual performance rather than of the I.Q.! We may then find that irresponsibility and brutality are by no means the prerogatives of the intellectually inadequate. We may find that we have rashly and one-sidedly picked on a defenseless and inarticulate minority.

Some of us are in the habit of speaking of this minority as a bunch of misfits. Many of them, it is true, are misfits. But this they are because our society has failed to help them to fit themselves for usefulness. They are misfits in schools which expect of them achievements of which they are not capable. They are misfits in life because we, the intelligent planners, have not fitted them for the things which they can do with profit to themselves and their communities.

We have just recently decided with a shudder to spend 50 billion dollars in this one year to rid ourselves of a non-feebleminded menace to civilization. This sum would be ample to maintain luxurious institutions for all those who need them and

to provide proper education for all the intellectually inadequate for more than half a century.

In return we should get not a world in ruins but the satisfaction of helping ourselves by helping tens of thousands of people. In return we should find that an increasing number of the intellectually inadequate would become skillfully adequate for many useful and needed jobs. We should be able to recognize them as full-fledged human beings capable of virtues and vices like the rest of us, only perhaps with less cunning and plotting, less suited for leadership but also less suited for misleadership.

Already the humanization of the feebleminded is making progress. Already a number of competent research workers are beginning to break down the notion of the homogeneity of the feebleminded by discovering hitherto unobserved group differences and individual differences among them. Already many of the spastics, believed to be hopelessly inadequate until a short while ago, have been lifted out of the human waste basket and given a new lease on life and hope. Already psychiatrists and psychologists are ceasing to set themselves up as diagnostic and prognostic judges, to treat the term mental deficiency as a swear word, and to use the I.Q. for the purpose of modified horoscope readings. Already word has got around that the I.Q. itself is not always immutable.

There is still much to be learned about those whom we call feebleminded. Valuable work in this direction is done quietly but efficiently in a number of centers. Vineland, Letchworth Village and Wayne County, Michigan, are a few shining examples commanding respect and inviting emulation.

But by far the outstanding contribution that we can, and must, make toward a solution of the whole problem is self-education and education of others toward the adoption of an attitude which extends the democratic ideal to the feebleminded, by whatever name they go, to cleanse ourselves thoroughly of the need for self-assurance by contrast, and to be friendly planners and helpers rather than carping critics and whining would-be protectors of future generations.

We shall thus exonerate ourselves by exonerating the feebleminded.

A SURVEY OF NEUROPSYCHIATRIC WORK AT THE BOSTON INDUCTION STATION[1]

WILFRED BLOOMBERG, M.D., AND MAJ. ROBERT W. HYDE, M.C., U.S.A.
Boston, Mass.

Induction of men into the Army of the United States through the Selective Service System began in this area on November 16, 1940. There were, at that time, three induction stations in Massachusetts, one at Boston, one at Worcester, and one at Springfield. Men were classified and examined by the local Selective Service Boards. These local boards occasionally—less often, probably, than they should have—made use of the services of the Advisory Boards. Those men who passed the local physical examination were sent on to one of the induction stations to be examined. As a result of experience with the draftees of the last war, the Army knew it to be necessary to check the physical status once more. The local board examiners were general practitioners, usually busy, who volunteered their services, and who, in spite of patriotism and the best of intentions, were not qualified as specialists in all the separate disciplines of medicine. Therefore, the Induction Station Medical Board was set up in terms of a production line, with specialists available in ophthalmology, orthopedics, internal medicine, and so on, each to carry out his special portion of the examination, and to give his opinion of the selectee's fitness for army service.

Neuropsychiatry, among the various specialties, has made great strides in the past 25 years. In addition, it had been learned from World War I that neuropsychiatric disabilities constituted a large proportion, about 30 per cent, of the disabilities from which soldiers suffered. And after the war, we continued to learn the same lesson—the cost to the Government of caring for men disabled by neuropsychiatric disorders during the war, including cost of treatment, disability allowances and pensions, has been, to date, in the neighborhood of $950,000,000—an average of $30,000 per man so disabled. Consequently, the induction board included from its very inception specialists in nervous and mental diseases.

This technique has been in operation now for some 15 months, and it would seem appropriate at this point to review what has been done, and what results have been achieved. It is easy to evolve a theory: to say that by including a minimal 6-minute neuropsychiatric examination, it should be possible to weed out a certain percentage of potential neuropsychiatric breakdowns, and to save the Army trouble and the Government money. However, no matter how perfect an advance theory is, the proof of it lies, after all, in its effective operation. We are now, at war, on the verge of a vastly greater operation of this same machinery. Before deciding whether or not it is worthwhile to continue its elaborate organization, we should evaluate its efficiency. The present paper is an attempt to do so in so far as its neuropsychiatric aspects are concerned. Because Boston is the largest of the induction stations in Massachusetts, and because a greater number of neuropsychiatrists were here available, the board at this station was earlier more highly organized than the others. We are assured, in fact, that neuropsychiatric service has been more complete at this station than at any other in this Corps Area—comprising the states of Massachusetts, New Hampshire, Vermont, Maine, Rhode Island and Connecticut. Also, as reported in an earlier paper(1), this station very early had the advantage of the services of a group of psychologists, under the leadership of Dr. F. Lyman Wells, who gave us psychometric studies of doubtful cases. Consequently it is felt that a comparison of the results attained at the Boston station with those

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Mass., May 18-22, 1942.

From the Department of Neurology, Harvard Medical School, and the Neurological Unit, Boston City Hospital, and from I Corps Area, U. S. Army.

from the other induction stations in the Corps Area will give an index of the value of the highly specialized type of neuropsychiatric examination here under discussion.

To review briefly the technique, which has in general been described by von Storch and his associates(2): The neuropsychiatric examination is conducted as part of a general physical examination. The number of men examined in one day by the station ranged from 100 to a peak on one day of 567. One neuropsychiatrist is available for each 50 men examined. Theoretically, 15 minutes per examination were available, but practically, in order to avoid a bottleneck which would stall the whole system and to allow the administrative and clerical work to be finished on the same day and the men to be entrained for camp, it was found necessary to finish the neuropsychiatric examination by early afternoon. The net result has been that 50 men have been examined in about 5 hours,—an average rate of 6 minutes per examination, with, in fact, the normals being passed through in 3 or 4 minutes, and 15 to 20 minutes spent on each of a few doubtful cases. About 40 different physicians have assisted the Board at one time or another. The work has been sufficiently strenuous that it has been felt unwise for any one man to examine too frequently so that many men have cooperated, each serving one or two days each week. It has been found, also, as noted by von Storch, that efficiency drops off if many more than 50 examinations are done by any examiner in one day, and also, perhaps paradoxically, if enough time is taken with each examination to stretch the total day out beyond about 5 hours. The work of any examiner in his 6th hour appears quite definitely to be not up to his standard, no matter how many or how few men he has seen in the first 5 hours, if he works continuously.

X-ray of the man's chest has been taken, urine specimen collected, and blood for Wassermann, if not already taken at the local board. The selectee, stripped of his clothes, has been seen by the dentist, opthalmologist, otologist, orthopedist, general surgeon and internist. The man comes then to one of several booths containing a neuropsychiatrist. The actual examination has, with certain individual variation by individual examiners, been conducted about as follows: As the man comes in, he is observed walking, then asked to stand, feet together, and close his eyes. He then is told "sit down," and the paper he carries, giving his name and the findings of the earlier examiners, together with the physical examination and history as given to his local boards, is looked over briefly. Then—"look at the wall," and pupils are examined by flashlight. Fundi are not examined routinely, since they have been looked at by the ophthalmologist, though they are re-examined for special indication. The extra-ocular movements are examined, facial movements, tongue movements, pharynx, and motor 5th nerve by "biting." Then "hold your hands out straight, spread the fingers; turn them over; back and forth as fast as you can; touch the tip of your finger slowly to the tip of your nose; other hand. Now squeeze my hands; now relax; sit back." All these orders and maneuvers are carried out in quick succession. From this point, the neurological examination no longer requires the man's concentration on carrying out orders—in fact, from here on he is better examined if relaxed and distracted. Consequently, at this point, questions bearing on the psychiatric status begin. Meanwhile, the radial and biceps jerks are elicited, abdominals tested in the sitting position by scratching with a pin, then the knee jerks and the ankle jerks, and finally the Babinski, by asking the man to stretch his feet out on the examiner's lap. During this part of the examination and afterwards, questions are asked in about the following words: "How is your general health? Have you ever been seriously sick? Any operations? Any bad accidents? Have you ever been knocked out? Do you ever have headaches? Dizzy spells? Fainting spells? Fits or convulsions of any kind? Any stomach trouble? Nervous trouble? Have you ever had a nervous breakdown? Has anybody in your family ever had one? Or any of the other things I've just asked you about? How old are you? What work do you do? What before that? What's the longest job you've held? How far did you go in school? How much

do you drink? Have you ever been arrested? What do you think about going into the Army?" Or with a volunteer, "Why are you joining the Army?"

Of course, depending on the answers, other questions are asked—for example, "How old when you quit school? How many grades did you have to repeat?" or, "How much time have you lost from work in the past year on account of sickness?" or, "Are you on a diet? Do you have to be careful of what you eat?" And where mental deficiency is suspected on the basis of school and individual history, and, still more, on the basis of response to questions, directions and general attitude, "How much is a half of a half? What year is this? Why is it called that? Why does the sun rise in the morning and set at night?" Those men at marginal level are referred to the psychometrist for examination. His report is added to the work-sheet and the man comes back to the referring psychiatrist who makes the final decision as to acceptance or rejection.

As has been noted, examinations have been carried out by many different examiners. Two facts emerged very quickly. First, a neuropsychiatrist of clinical experience, thrust into this situation, presented with the problem and a general knowledge roughly of the criteria of acceptance, quickly worked out a technique of examination which satisfied him. It is extremely interesting that the technique evolved by so many different men was so nearly similar—a fact suggesting that the solution to the problem was probably fairly correct, since it was independently arrived at by many different examiners. It is of further interest that numerous published reports from centers all over the country describe remarkably similar techniques of examination. The second point was the remarkable uniformity of rejection rate of the examiners with the greatest clinical experience. This figure ranged from 6 per cent to 9 per cent. Some examiners averaged as low as 1 per cent, some as high as 16 per cent. When one considers the clinical background of the various examiners, it seems reasonable to assume that the true incidence of rejectable defects discoverable in such an examination as this is somewhere in the neighborhood of 7½ per cent, and that those examiners whose rejection rate was consistently much lower were failing to find pathology, or had too lenient a standard.

At this point, a word might be said about the criteria for acceptance. It should be emphasized that there has been no attempt to make diagnoses, except very roughly and approximately. The critical problem has been not to make an intricate and subtle differential diagnosis, but merely to decide whether a man is or is not a good risk for army service.

Obviously the man with organic neurological defect should be rejected, even though this consists only of a positive Babinski and unequal pupils, and no definite neurological diagnosis can be made. The epileptic should be excluded. So also should the man with a definite psychosis. These classifications appear to need no argument. However, the problem deals more with intangibles when the neuroses, the unstable personalities, and the maladjusted personalities are considered.

In general, the major criterion has been that a man should be excluded if either he presented a considerably greater than average risk of breaking down under the strain of army service, either in peace or war-time; or if he appeared to be substantially more likely than average to be a trouble-maker. In the first category, of course, fall all men with a history of a previous attack of major psychosis, whether or not any present evidence thereof is elicited. Also, the men with either signs or history of anxiety attacks, gastric neurosis, psychoneurotic episodes, or sufficiently severe vasomotor and cardiac instability to warrant a diagnosis of neurocirculatory asthenia. These men may not break down, but they are much more likely to do so than the average man without such disorders, and therefore should be excluded.

The second category is even more difficult to be dogmatic about. It includes the psychopathic personalities, the asocial, the criminal, the chronic alcoholic, the homosexual. Perhaps the schizoid personality, whatever that may be as separate from an incipient true schizophrenia, should also be included. Even the man who, without homosexuality, is so effeminate in appearance

and mannerisms that he is inevitably destined to be the butt of all the jokes in the company, should be excluded.

Finally, though all are agreed that the mentally deficient should be rejected, there is no unanimity of opinion as to where the critical line should be drawn. It has been the station's practice to reject for this reason men with mental age below 10, accept above 12, and, between 10 and 12, to decide the individual case on its merits, after consideration of industrial history and general social adjustment. In this mechanized war, it appears to us that there is less room even than in the last war for the low intelligence. The labor battalions caused more trouble than they were worth, before, and now the thought of a tank-driver with mental age below 10 is appalling.

Results of the operation of the technique must be adduced as we have already noted, by comparison of the figures from this station with those of other induction stations.

In the comparative period from November 16, 1940, to July 15, 1941, the Boston station examined 15,315 selectees. During this same period, 26,240 selectees were examined in the other stations of the I Corps Area. There were, on November 19, 1941, 16,671 men in this Corps Area, who had been inducted in this Corps Area, and 16,379, very nearly 50 per cent, who had been inducted in other Corps Areas. It will be noted that dates are not always exactly coincident. However, in dealing with such large groups, it is felt that comparative figures will remain valid, so long as the records compared are approximately the same.

It was our aim to attempt to determine how many errors were made by the neuropsychiatrists at the Boston station, and whether the rate of error was equal to, greater than, or less than that at other less highly organized stations.

According to army regulations, a selectee may be discharged from the army, any time up to 6[2] months after his induction, on a so-called "certificate of disability." It is understood, by present regulations, that such discharge within this given period, prevents a man from being eligible for benefits accruing to army service, unless his discharge is directly and definitely service-connected. In other words practically speaking, there is a strong drive to rid the army of sick men and trouble-makers within that period, if it can be done. Therefore, it seems reasonable that the number and rate of such certificates of disability discharge should be an index, roughly, of the number of errors in diagnosis in all fields, which have been made by the induction station.

It should be noted that the certificate of disability discharge is used for specific diagnosis, for example, epilepsy, dementia-præcox and hysteria. There are available other modes of discharge, namely court-martial, discharge for conviction by civil court, and so-called "section 8" discharges, which include those for inaptitude, undesirable traits of character and misconduct. The alcoholics, homosexuals and others of that general group, are likely to be hidden in the Section 8 discharges, and unfortunately no broken-down figures are available for these cases. Also, undoubtedly, some men who are discharged under certificate of disability discharge for gastric ulcer, for example, will in fact have been suffering from gastric neurosis.

It is clear, therefore, that the figures for certificates of disability discharge as such do not represent the total number of errors at the induction station. However, since the same factors work in all groups—the men inducted at the Boston station and those inducted at other stations in the Corps Area as well as in other Corps Areas—these hidden cases will not affect the validity of comparative figures. Our study, then, will confine itself to an investigation and consideration of the comparative statistics. In fact, the Section 8 discharges during the period under discussion at one of the camps in the area, Fort Devens, in relation to a group of about 6,000 men, have been kindly furnished to us by Maj. Malcolm J. Farrell of that station. There have been only 5 such Section 8 discharges, so that, if the proportion holds, there would have been only 35 in the whole corps area—a figure so small as not to affect the validity of our conclusions.

[2] The 6-months peace-time period was in force during the time covered by this study. Now that we are at war, the "trial" period is reduced to 90 days.

There have been in this period, with the whole Corps Area and for all reasons, 1,269 certificates of disability discharge, of which 291, or 23 per cent have been for neuropsychiatric reasons. If all stations and all specialties were functioning with the same degree of efficiency and the same rate of error, it would be expected that the relationship between neuropsychiatric and general rejection rates at the induction examination would be about the same, i.e., 23 per cent. In fact, the rate in Massachusetts has been 24 per cent while in the rest of the corps area it has been only 16 per cent, and the rate at the Boston station has been 29 per cent. While these figures are not significantly different, perhaps, they tend in the general direction of the conclusion that the neuropsychiatric examination at the Boston station has been more stringent than in the rest of the corps area. The figures are nearly the same as for the whole of Massachusetts but in fact the Boston station has inducted 68 per cent of all men inducted in Massachusetts.

The check on whether or not this more stringent examination has been in fact a more efficient one—in short, a better one—rather than a mere officious one, must come in a comparison of the certificates of disability discharge rates of men from this station with those from other stations. These figures are even more revealing. The certificates of disability discharge rate for neuropsychiatric reasons for the Corps Area outside of Massachusetts has been .46 per cent, while for the state of Massachusetts it has been only .33 per cent—a reduction of about ⅓ over the expected rejection rate in the whole Corps Area. This represents 50 men so discharged from Massachusetts as compared with 67 from the rest of the Corps Area. Still further, the Massachusetts rate of .33 per cent includes the whole state. As noted above, 68 per cent of the men inducted in Massachusetts, came through the Boston station, but only 46 per cent of the certificates of disability discharge charged to Massachusetts were inducted at the Boston station—23 out of the 50. It would appear, therefore, that the Boston station has had a certificate of disability discharge rate for neuropsychiatric disorders during this period of only about one-half that of the rest of the Corps Area.

When the figures are further broken down, the result is even more striking. Of the 23 certificates of disability discharge attributable to this station, 5 were for epilepsy, which obviously could not have been diagnosed without a routine electroencephalogram or a fortuitous fit during the examination, if the man were a negative malingerer who chose to conceal the history. Of the remaining 16, 8 were not examined by the Board, since they were regular army enlistments or replacements, inducted at times when the Board was not meeting. This leaves only 7 men who were discharged after having been passed by the Boston board. One of these was a man who proved later to have dementia præcox, whose rejection was recommended by the psychiatrist, but who was accepted anyway by the regular army medical staff. It should in fairness be stated that this occurred early in the history of the board. Thus there were 6 men who passed through the Boston station who were recommended for acceptance, and who are properly chargeable as errors to the neuropsychiatrists on the board. These 6 cases were discharged from the army with the following diagnoses: 1 epileptic; 1 manic-depressive manic; 2 dementia præcox catatonic; 2 psychoneuroses. It would seem that the epilepsy, the dementia præcox cases, and probably both of the psychoneuroses, should have been recognized at least in potentiality, by the examiners and are properly charged as errors against the board. In one of the dementia præcox cases, indeed, the psychiatrist thought it important to mention that the man's father had had a "nervous breakdown" and that the man himself had "some stomach gas," but did not feel justified in rejecting him. The one epileptic gave a history of a spell or fainting attack 5 years before in a locker-room after a basketball game but was nevertheless accepted by the neuropsychiatrist.

It is our feeling that the work done under these difficult circumstances by a cooperative group of neuropsychiatrists has been extremely good. The comparative figures above-noted seem to us to warrant the con-

tinuation of a board such as has been in operation for the past year. We can learn from our past experience that clinical background and judgment are of the greatest importance in carrying out a task such as this, which involves the examination of many men in a short period. The need for somewhat further clarification of criteria is apparent in order to reconcile rejection rates as far apart as 1 per cent and 16 per cent. However, although no human agency is perfect, and while no final conclusions can be drawn until 20 years from now probably, it does appear that the present organization of the neuropsychiatric service at the Boston Station is functioning very efficiently, and such organization should be continued here and extended to other stations wherever possible.

BIBLIOGRAPHY

1. Atwell, C. R., Bloomberg, W., and Wells, F. L. Psychometrics at an army induction center. N. E. J. Med., **224**: 898, 1941.

2. von Storch, T. J. C., Pratt, G. O, Farrell, M. J., Currier, D. E., and Viets, H. R. Observations and suggestions concerning neuropsychiatric examinations for the army of the United States. N. E. J. Med., **224**: 890, 1941.

NEUROPSYCHIATRIC EVALUATION OF THE POTENTIAL SOLDIER [1]

LT. H. H. GOLDSTEIN, M.C., Fort McPherson, Ga.

The recommendation as to the personnel requirements for neuropsychiatric examinations, the use of one psychiatrist to each 50 registrants examined, although excellent, is not always possible of fulfillment. It is true that certain areas of the country could muster a sufficient number of well trained or partially trained psychiatrists to meet the requirements, but other areas could not possibly fulfill the recommendation made. It was felt by the author that a reasonably good performance at elimination of neuropsychiatric disabilities could be obtained in the absence of the ideal situation.

Circular letter No. 19(1) gave descriptions which were found only slightly helpful in determining a neuropsychiatric basis for rejection of the registrant. Information of value was found in articles by Simon(2), Aita(3) and Menninger(4). These authors stressed the necessity for examinations of five to fifteen minutes. Where 150 to 250 men were to be seen by one psychiatrist, it was not possible to spend that much time per examination. In order to accomplish the purpose of the psychiatrist on an induction team examining large numbers of men, the following factors were considered:

Use of Available Information

1. The answers to questions given on form 200(5) (Report of Physical Examination), page one, were valuable in locating some unfit registrants. After a few days of practice, the examiner could notice at a glance answers which he might consider significant, and by further interrogation, evaluate them. Steps are being taken to have a more comprehensive questionnaire prepared.

2. The neuropsychiatric examiner, being placed last in the line of examiners, was able to evaluate information obtained on the examination for literacy, and on the musculoskeletal, eye and ear and heart examinations. It is quite obvious that suspicion as to neurologic or psychiatric disability is directed to the attention of the neuropsychiatrist by findings noted by these examiners.

3. On entrance of the registrant, his gait, the musculo-skeletal system, facial appearance and the use of the upper extremities, noted in movements required in handling of papers carried by the registrant, are observed. The ability to find neuropsychiatric defects will vary with the individual examiner's as determined by the time of day, etc. It is suggested that the greater number of examinations be carried out in the forenoon whenever possible. During this part of the examination, significant hints to diagnosis might be noted. The posture, gait and facial appearance may suggest encephalitis; ptosis of eyelids, facial paralysis and paralysis of extremities must be noted with a sweep of the eye and followed up by other observations, according to the impression produced.

4. On being seated, the first question asked is an important determinant in further questioning. The question asked is, "How is your health?" This question, if answered by a response indicating bad health, is followed by, "Have you had any nervous illness, fits or spells?" or, "Have you been troubled by sickness?", "Are you nervous?", "How many times have you been in jail?", and, "How far did you get in school?" These are considered basic questions. Using these basic questions, a series of other questions, depending on answers given to the above, were developed. The criteria used as a basis for rejection were formulated from the above material.

Criteria and Basis for Rejection

1. All cases showing evidence of demonstrable organic pathology in the central nervous system were eliminated on neurologic findings. These were noted as a result of answers to the questionnaire, the examination of the registrant prior to reaching the neuropsychiatrist, and the observation and

[1] From the Induction Center, Ft. McPherson, Ga., Colonel L. R. Dunbar, surgeon.

The help of Lieutenant J. Mergener, Camp Davis, N. C., and Capt. E. R. MacLennan, Chief Medical Examiner, is gratefully acknowledged.

examination by the neuropsychiatrist. It might be pointed out that only easily demonstrable neurologic disease will be eliminated. However, unless a rather thorough neurologic examination were given, it is doubtful if other than obvious cases would be recognized.

2. The elimination of psychoneurotic registrants is probably the most difficult task. Malingering was a factor which had to be kept constantly in mind. Psychoneuroses were diagnosed on the basis of an evaluation of the combination of responses given to questions listed below.

The responses to questions on form 200 showed considerable complaints or a complaint of nervousness or similar statement. On response to the question, "How is your health?" the inductee answered signifying poor health, and described the nature of his ill health so that it corresponded to complaints on form 200.

"How many times did you see a doctor about your health?" followed answers which indicated poor health, to the first question (b). The frequency of medical visits depending on economic status of the registrant, was an important determining factor in diagnosis.

When questioned as to leaving work because of illness, an answer was obtained indicating periods of, or complete inability to work because of ill health. Repeated necessity for leaving work was suggestive of a disability.

(a) The diagnosis of hypochondriasis was made on the response of the registrant to the questions on form 200, and those above indicated, with a myriad of complaints of pain and discomfort in many organs, frequent visits to physicians about ill health, and the necessity to leave work because of illness, from a few to many occasions.

(b) Individuals who complained of nervousness, tremulousness, palpitation and ready sweating, who on examination disclosed such findings as cold, wet and cyanotic hands, tremors, hyperhidrosis, who were found to be suffering from tachycardia and hypertension with the diastolic being affected relatively little, and who often showed anxious facies, were diagnosed as anxiety neuroses. History of frequent visits to physicians because of illness, nervousness or heart trouble, and necessity for leaving work because of illness were frequently obtained. Individuals with the above symptoms on examination, but of mild character and with no complaints and without being acutely aware of their symptoms were not rejected. Attention was directed to this group in a majority of cases by noting the pulse and blood pressure readings of the previous examiner.

(c) If the inductee's form 200 indicated a previous complaint of heart trouble and he complained of being in ill health, precordial pain, palpitation and dyspnea, and found it necessary to be away from work because of ill health, but showed no anxiety symptoms, and in addition to these complaints, had visited a physician frequently and over a period of several years because of heart trouble, he was diagnosed as cardiac fixation. Many of those rejected had evidence of autonomic instability mentioned in the diagnosis of anxiety neurosis, but the symptoms were of minor importance to the registrant, as compared to the cardiac complaints.

(d) If the outstanding complaints were weakness, ready fatigue and inability to perform work, and the patient had seen a physician on numerous occasions and found it difficult to do other than simple tasks; and if the registrant appeared apathetic, spoke as if it were an effort to elevate the voice and often was thin and undernourished, he was diagnosed as neurasthenia. Stress here must be placed on the significance of the frequency of visits to physicians about health.

(e) The presence of conversion symptoms was evident substantiation of a diagnosis of hysteria. Rejection was dependent on the presence of a psychiatric disability prior to examination, as indicated by answers to form 200, and the necessity of medical care for disabilities during the last several years. Conversion hysteria was sufficiently unusual to make it a negligible problem.

(f) Psychasthenia, compulsive obsessive neuroses, in the absence of other psychoneurotic complaints could not be readily detected, since the examining situation is not conducive to overcoming the restraint of the registrant to discuss such problems in a short interview.

3. Epilepsy was a difficult problem from the viewpoint of elimination of true epilep-

tics. One of the difficulties was the frequency with which a history, which was rather suggestive of epilepsy or some other convulsive disorder, was given, in which the individual ceased to have "spells" within the last five to ten years prior to induction. Individuals within this group were not eliminated unless they had corroborative evidence in the nature of epileptic stigmata, injuries, deterioration, etc. Usually these individuals gave the information of their seizures in response to a question as to whether or not they had fits, and were not interested in stressing the fact themselves. It is quite possible that some percentage of these men were true epileptics, who did not wish to be considered as such. It would be interesting to make some further study of this problem.

Epilepsy was diagnosed if the answers to form 200 as to seizures was positive, stigmata such as injuries, scars on tongue, etc., were present and egocentricity was noted, and the registrant's history suggested epilepsy.

Individuals who apparently were heavy drinkers and developed their seizures during recent years and only during alcoholic excesses, were likewise disqualified.

4. Dementia præcox as a symptom complex in which the features were readily identified, needs no mention. This group is a very small one in the total of men examined. There was a group of individuals who were eliminated upon the following criteria: (a) A history of hospitalization for a disorder which, from description, was schizophrenic in character, with or without evidence of symptoms in the short interview. The naming of a definite hospital and the nature of the explanation were important determinants. (b) Some individuals answered with hesitation and in a rather inaudible voice, showed a tendency to preoccupation during the interview, and in answer to questions like "How do you like girls?" followed by other affect provoking questioning showed little affective reaction. Their responses seemed superficial in explanation of their behavior, and the work being performed by them required no initiative, or explanations such as "I can't work," or "I'm not able to do heavy work," were given. These were considered unfit for military service, and given a diagnosis of schizophrenic reaction type.

5. Manic-depressive reaction was diagnosed on: (a) History of previous attack, with hospitalization, the hospital being identified by name. (b) Obvious symptoms. Some depressed or hypomanic patients could be detected on the basis of symptoms less overt than those of the typical depressed or manic phase.

6. Other psychoses. Obtaining of impressions based on suggestive symptoms which were then investigated will vary considerably with individual examiners. The alertness of the examiner will to a large extent determine the frequency with which other psychotic manifestations than those mentioned would be recognized. This group could not be considered a significant one.

7. Disqualification for alcoholism was based on: (a) Obvious evidence of excessive drinking as described in circular letter 19. (b) Drinking considerably, according to history, with frequent arrests for drunkenness or disorderly conduct. It is important to evaluate arrests in accordance with the local attitude of the law enforcement agencies. (c) Drinking in "sprees," the periodic drinker, with a history of discharges from work because of drinking, plus arrests, and history of drinking over many years. (d) Drinking excessively, according to history, with considerable drinking done alone, and suggestive evidence of an underlying process such as depression or schizophrenia.

8. Mental deficiency was diagnosed in: (a) Obviously defective individuals with stigmata such as high arched palate, cranial deformities, cretinism, mongolism. These individuals form no problem and are not frequently seen. (b) Individuals with an extremely poor school record, with evidence of retention in one class for many years, poor literacy and failure on a few eight year level questions. The test for literacy was a potent factor in eliminating a good share of defectives. Tests were given to all selectees who had failed to complete more than four grades.

9. Psychopathic personalities were recognized on the response to questions as to jail record and school record with follow-up questions based on the registrant's response.

Where evidence of the behavior of the patient leading to difficult adjustments began early in life, the patient was considered disqualified as psychopathic personality, rather than on alcoholism or any other diagnosis.

Registrants so diagnosed were individuals who had been in jail on frequent occasions, usually had been in some difficulty from early youth, came of families in which parents were separated, dead or poorly adjusted, showed poor perseverance in work record, and showed no evidence of remorse about their past. It was on the basis of answer to the question as to jail sentence that the diagnostic follow-up questions were made.

10. The diagnosis of sexual psychopathy will probably be limited to those individuals with overt behavior suggesting their feminine psychological trends. These individuals are usually noted by the other examiners without difficulty.

In summary it might be said that, although it is necessary that diagnostic acumen be sharpened, and that impressions be formed by a rapid survey of the patient, in psychiatric evaluation of men being examined at the rate of 100 to 250 daily, it is possible to develop a method of examination and criteria for rejection which enables the psychiatrist to carry out the task of elimination of neuropsychiatric disabilities with a reasonable degree of efficiency. Much depends on the truthfulness of the registrant, but it may be assumed that, except for a few instances, answers would be given truthfully, since the registrant would realize that his visits to physicians and work records could be checked.

BIBLIOGRAPHY

1. Circular Letter No. 19. Neuropsychiatric examination of applicants for voluntary enlistment and selectees for induction. War Medicine, May 1941.

2. Simon. Disorders with structural features. War Medicine, May 1941.

3. Aita, J. A. Neurologic and psychiatric examination during military mobilization. War Medicine, November 1941.

4. Menninger, William C. A condensed neuropsychiatric examination for use of selective service boards. War Medicine, November 1941.

5. DDS Form 200 (Report of physical examination).

PSYCHIATRIC PROBLEMS IN MILITARY SERVICE DURING THE TRAINING PERIOD

ARTHUR O. HECKER, Major, M.C., MARVIN R. PLESSET, First Lieut., M.C.

AND

PHILIP C. GRANA, First Lieut., M. C.

Station Hospital, Military Reservation, Indiantown Gap, Pa.

The problems of military psychiatry may be classified in four general categories:

1. Those concerned with induction and enlistment of soldiers.
2. Those arising during training.
3. Those arising during combat.
4. Those concerned with psychiatric casualties in the post-war period.

That this is rather an arbitrary classification should be made clear, for it is obvious that the categories overlap in the actuality of the total picture. Nevertheless, for purposes of presentation this categorical separation serves a useful purpose, and the discussion of the problems relating to a separate category will point the way for correction of problems in other categories. It is for this reason that we are here presenting our experiences with the psychiatric problems encountered during a ten months' period of training in what was, during that time, a peacetime army.

The material presented covers the period from February to December, 1941. It was gathered on the neuropsychiatric section of a typical eight hundred bed station hospital serving approximately 17,000 troops in training. Of these troops approximately 12,000 were National Guard troops federalized in February, 1941, and the remainder were trainees inducted under the Selective Service Act.

A word of explanation of these statistics is necessary. The National Guard troops were at this station from the time of their induction into Federal Service whereas the troops procured by Selective Service had been through at least thirteen weeks basic training at other stations prior to transfer here. Therefore it would be expected that some of the neuropsychiatric cases among selectees would have been weeded out of service prior to coming under the control of this command. Another factor is that selective service induction boards are presumed to have, and most do in the areas from which our troops were drawn, one or more psychiatrists on the medical board for the final induction physical examinations. The medical board for induction of the National Guard troops in this command did not have a psychiatrist specifically assigned except in those instances in which National Guard medical officers were psychiatrists. (This latter situation obtained in at least two regiments.) On the other hand, the National Guard units had been organized for years

TABLE 1

CLASSIFICATION OF CASES

Type	N. G.	Totals	S. S.	Totals
Psychoses:				
Schizophrenia	18		10	
Manic-depressive	4		0	
With Mental deficiency	2		0	
Unclassified	1		1	
Alcoholic	0		1	
Total		25		12
Psychoneuroses:				
Conversion neuroses	32		30	
Reactive depression	6		5	
Neurocirculatory asthenia	6		6	
Anxiety state	9		10	
Neurasthenia	3		3	
Hypochondriasis	0		1	
Obsessive compulsive	0		1	
Mixed	7		12	
Total		63		68
Constitutional psychopathic state		23		7
Mental deficiency		21		10
Epilepsy		16		2
Alcoholism, chronic		1		0
Total		149		99
Total cases		248		

and had, except in the case of recent recruits, the opportunity to weed out the mental misfits prior to their Federalization. Taking these factors into consideration one finds a rational balancing of factors on which comparisons may be made.

The proportion of National Guard troops to Selective Service troops is approximately 2.4 to 1. One would, therefore, anticipate psychiatric cases from National Guard troops to be 2.4 times more frequent than cases among Selective Service troops other things being equal. The actual ratio was 1.5 to 1. In the psychoses it was 2.08:1; in the psychoneuroses 1:1.07; constitutional psychopathic states 3.28:1; mental deficiency 2.1:1; epilepsy 8:1. Alcoholism was at no time a problem on this service.

The Psychoses

Psychiatrists have anticipated that the majority of men inducted into military service with a strong potential for developing a psychosis under stress will manifest their psychosis soon after induction. Simon(1) reporting on the specific data in the lives of 183 veterans, hospitalized during the period September 1, 1939 to August 31, 1940 for mental disease states: "It is interesting to note the number of men who broke down with obvious psychosis soon after their enlistment. Of particular importance was the fact that 17 (9.2 per cent) were or became psychotic on the first day of their service and that 88 (48 per cent) became psychotic within one year of their enlistment." The majority of psychotic patients in our series were admitted within the first six months of their service. An analysis of all psychoses admitted to this service with regard to hospitalization for psychotic manifestations in relation to length of service was made. This series includes the cases listed in Table 1; also, those admitted from a nearby reception center which we serve, and casuals.

Only three cases (6.2 per cent) had more than one year service prior to admission to the hospital because of their psychosis. Of all cases, seven (14.5 per cent) had hospitalization for a psychosis prior to induction into military service. Two psychotic patients had previously been discharged from the armed forces on the basis of a psychosis, presented their discharge papers at time of induction, but were inducted despite this.

It is our opinion that many of these patients could have been readily detected and rejected at the time of their final physical examination prior to induction. It is interesting to note, in passing, that the declaration of war early in December, 1941, brought in a new group of psychotics among volunteers.

There were some features seen in the total group of psychotic patients which are deemed worthy of brief comment. In many of the cases excitement and panic elements were predominant with rapid improvement on hospitalization and, in some cases which were followed, complete recovery occurred on transfer to a civilian hospital for mental diseases after discharge from the army. Of those diagnosed here as schizophrenia many fall into the category described by Bateman(2) as "schizophrenic reaction types." They seem to be acute reactions which are schizophrenic in their manifestations, but are not true cases of schizophrenia. The same situation was noted in the manic-depressive group. While individual cases showed sufficient evidence to warrant placing them in a definite psychotic classification, most improved rapidly in this hospital without any special treatment. It would appear that many were abortive psychotic episodes, which nevertheless conformed to the syndromes of the usual psychoses except as to duration.

TABLE 2

	Total cases, 48	Cumulative percentile of total psychoses
Admitted day of induction.....	3	6.2
Within one week of induction.....	11	22.9
Within one month of induction.....	15	31.6
Within three months of induction..	21	43.7
Within six months of induction....	33	68.9
Within nine months of induction...	41	85.4
Within one year of induction.....	45	93.8

The Psychoneuroses

The Conversion Neuroses.—This group, constituting 47.33 per cent of the psychoneuroses, is worthy of special comment. It included the majority of those patients with the poorest psychobiologic potential for adaptability to the stresses and strains of their environment. All members of the

service were impressed by the stigmata of inadequacy presented by these patients. They were best described by an inspecting officer, not a psychiatrist, who saw many of them lined up in the ward. His comment, "There's not a good human being in the crowd," is aptly descriptive. Their attitude, demeanor and responses to even the mild rigors of ward life indicated a deficient potential.

A study of the life history of these patients gathered from autobiographical accounts and social service studies revealed that they were over-protected all of their lives and had never shown any inherent potential for adaptability to new life situations. Their school and work records were poor (not due to mental deficiency) and their record of petty illnesses full. In reviewing our case records it is difficult to state whether their over-protection was the cause of their inadequate reactions or the result of them. In the brood, these persons may have been recognized as the unfit and weak almost from birth and being so recognized were "mothered" and protected by the others in the family. On the other hand for various psychologic reasons (unconscious hostility?) these children may have received compensatory over-protection which was of psychopathological significance in their faulty development. They fell into the category described by Margolis(3) as the constitutionally biologic inadequate

> whose vulnerability to physical incapacity is extraordinary . . . . their problems ranging from enuresis [frequently noted in our group] to a painful incapacity for ordinary progress in school. They are shy, thin, pallid children who pick at their food, and are sorely troubled with constipation. . . . . There is not an organic unit of the body that may not produce symptoms. Characteristically, the manifestations are many, bizarre, widely scattered and superficially unrelated. . . . . Fatigue states of chronic duration. . . . . The duration of the fatigue in terms of years . . . . are arresting signs. . . . . It is rare for them not to complain of some degree of digestive disturbance . . . . bloating after meals, the "weak stomach" . . . . constipation is almost the rule, and it may be stubbornly distressing and chronic. Often it is alternated with periods of diarrhea with cramps and excessive mucus. Such patients "vomit easily" on the slightest provocation and are frequently bilious. At night they lie awake for hours with a dull, "ugly," gnawing ache in the abdomen. Often this discomfort is in the lower abdomen, sometimes on the right side, even after an appendectomy scar stands as a grim reminder of a futile attempt at a cure. Frequently they suffer with a diagnosis of gastroptosis. Their . . . . bowels are notoriously "gassy." There is hardly a syndrome of digestive disease which the symptoms may not simulate, *but usually not too closely.*
>
> Vasomotor abnormalities are constant trimmings. These are the people . . . . who sweat profusely on the slightest exertion or excitement, whose hands are cold and wet . . . . attacks of vertigo either of momentary duration or of more chronic type are frequent. They are extremely susceptible to infection: coryza, frequent grippe and sinusitis.
>
> With regard to objective manifestations . . . . one is impressed with the paucity of serious and isolated organic defects. However, ... such individuals are often poorly developed, many are deficient in stature or in some other attribute of somatic development. The texture of the hair, of the skin, or the configuration and structure of the teeth may be abnormal. The general impression . . . . is that of an organism made up of inferior materials, poorly organized. As final evidence of the constitutional, or shall we say, inborn, nature of the defect is the history of a long train of difficulties, dating back to the cradle, showing an organism always at odds with an environment that is not so harsh to so many others.

We have quoted Margolis' description at length because it typifies so many of the patients in this group. Their adaptability potential is practically nil.

It may be argued that we were wrong to classify these patients under conversion neuroses, but it was done in view of the fact that the symptoms develop under environmental stress and are partially or totally relieved by environmental security. The inadequate personality without physical complaints will be discussed under another heading (constitutional psychopathic state). We do believe, however, that the neurotic symptoms presented by these patients are merely the overtones of a neurosis engrafted on a so-called constitutionally biologic inadequate personality. That they are conversion in type—the conversion of a mental conflict due to inadequate adjustment to the environment into a somatic complaint or complaints—is obvious. It is also felt that the basic mechanism is anxiety of unconscious origin due to their inability to react securely to any change in environment which takes them out from under the protection of the family constellation.

An early attempt to classify these patients as predominently sympatheticotonic or parasympatheticotonic served only to confuse the picture. Objective tests were instituted and

a work sheet prepared (Table 3) from which we hope to develop more knowledge of the part the autonomic nervous system plays in the total picture. Although many cases in this group showed symptoms and signs of neurocirculatory asthenia, the other factors and complaints were predominent. We classified as cases of neurocirculatory asthenia only those cases which showed this syndrome and little else of significance.

There were, of course, cases of conversion neurosis in which specific psychopathology

TABLE 3

SPECIAL EXAMINATION OF AUTONOMIC NERVOUS SYSTEM

Fainting spells	Salivation	Diarrhea
Dizzy spells	Post nasal drip	Pencil stools
Headache type	Morning cough, productive	Mucus in stools
Cold feet	Sighing respiration	Urinary frequency
Cold hands	Precordial pain	Nocturia
Sweating, feet	Palpitation	Enuresis
Sweating, hands	Lump in throat	Water intake
Sweating, axilla	Tightness, stomach	excessive
Redness of hands	Belching	poor
Redness of feet	Nausea	Bladder pain
Dryness of hands	Vomiting	Sexual appetite
Dryness of feet	Heaviness in stomach	excessive
Hives	Fullness, stomach	below par
Rashes	Burning, stomach	Aching, arms or legs
Hay Fever	Abdominal distention	Sleep disturbance
Rhinorrhea	Constipation	Blurred vision
		Tight collar

Miscellaneous:

Habitus	Dermatographia
pyknic	Apex beat
asthenic	Hyperhidrosis
normal	Dryness of skin
Pulse rate	Tremors
Temperature	Sighing respiration
Pupils	Tachypnea
contracted	Tender colon
dilated	G. I. series
unequal	
Peripheral pallor	
Peripheral cyanosis	

Cold pressor test	Blood calcium
Schneider index	B.M.R.
Postural test	Sugar tolerance curve
Vasoconstrictor test	Startle pattern
Parotid secretion	Gastric analysis
Carotid sinus	W. B. C. (Fasting)
Hyperventilation	Adrenalin test

Remarks:

could be developed from past traumatic psychic experiences, or which developed in previously apparently well integrated persons because of mal-adjustment to military life. These cases were distinctly in the minority.

To those of us who were in civilian psychiatric practice and who were trained in the belief that the diagnosis of constitutional inferiority was an obsolete term, our experiences have been a revelation. On the other hand, these patients are not brought to the attention of the civilian psychiatrist, for in their protected lives and with a thousand daily methods of evasion of unpleasant environmental factors, they do not develop serious conversion symptoms. However, as soon as they are placed in even the mildest of military training situations, with attendant discipline, reality is too much for them to contend with and conversion symptoms develop as a means of escape.

(It is also interesting to note that those few mental defectives with symptoms of a neurosis or psychoneurosis were either of the conversion type described above or characterized by hysterical comas or fugues.)

These men, after psychotherapy consisting chiefly of suggestion, re-orientation, and occasionally catharsis under amytal narcosis with perhaps some little improvement while in the hospital, were repeatedly returned for further trial at duty, but it was the rare case which did not return for hospitalization because of a recurrence of symptoms within 48-96 hours of discharge. The prognosis is almost universally hopeless for reasons which will be brought out at the conclusion of this paper.

A great many of these cases were originally admitted on other services, chiefly gastro-intestinal, cardiac and orthopedic, and were transferred to the psychiatric service on the recommendation of the psychiatric consultant.

Neurocirculatory Asthenia.—In addition to the 12 cases reported in this series 24 other cases were seen on the cardiovascular section of the hospital. Although psychoneurogenous elements could be detected in many of these patients, one of us (A. O. H.) is convinced that in a certain percentage of patients presenting the syndrome of neurocirculatory asthenia a congenital dysfunction of the autonomic nervous system is the factor of primary importance. The other point of view is that chronic tension and anxiety lead to a chronically disturbed autonomic system just as fear produces an acute disturbance in that system. Our experiences with these cases add nothing to what has been reported in the recent literature, notably by Spillane (4) and Wood(5).

Anxiety States.—We anticipated a far greater number of acute anxiety states than we were called upon to care for, *i.e.,* cases with overt expression of anxiety. However, this being a peace-time army during the period which we are reporting, the actual threat to life and security of the troops was not great. The acute anxiety states, judged from experiences in the past war (Miller), are the dominant group in the actual theatre of warfare.

The cases classified as reactive depressions, neurasthenia, obsessive, compulsive and hypochondriasis presented nothing out of the ordinary. Most were in better integrated and more highly educated individuals, though this was not altogether a consistent finding.

Constitutional Psychopathic States

This is an army designation and includes those personality disorders subclassified as criminalism, emotional instability, inadequate personality, paranoid personality, pathological liars, sexual psychopathy and unqualified types. It corresponds to the classification psychopathic personality with its subclassification of the Statistical Manual prepared by the Committee on Statistics of The American Psychiatric Association. Both classifications have been recognized as inadequate and superficial for years, but it is only in relatively recent years that the problem of the psychopathic personality has received the investigative attention it deserves. A final classification has not been arrived at, though many have been suggested.

The use of the term constitutional psychopathic state as a basic diagnosis for personality disorders manifested by criminalism, emotional instability, inadequate personalities, paranoid personalities, pathologic lying and sexual aberrations, is a wholly erroneous conception of the psychopathology of many of these cases. It can be shown in a great

many of such patients (particularly the paranoid personality, the pathological liar and sexual disorders) that conditioning factors in their linear development are responsible for their reactions and that a constitutional factor is not present with the same frequency and often not at all. It is conceded, on the other hand, that certain types of cases in this group do have a strong constitutional background. Therefore, a broader general classification with more specific subclassification is needed—one that takes cognizance of both those cases which have a strong constitutional (hereditary or congenital) factor and also those which are the result of psychopathology somewhere along the line of their personality development.

The personality disorders we encountered fell into four general groups:

1. The constitutionally biologic inferior individual without somatizations of his self-environmental conflicts.
2. The chronically aggressive individual.
3. The overt homosexual.
4. Unclassified.

The Constitutional Biologic Inferior Personality (the Helpless Group).—These individuals are similar in psychosomatic development to those inadequate personalities described under the conversion neuroses, with this exception—they flee from or evade their environment rather than develop conversion symptoms. They project their own difficulties on others—"nobody understands me; people aren't fair to me; they pick on me"—but are seldom aggressive. Rather they tend to whine and seek sympathy by their subordinate attitudes. Under criticism they are rapidly cowed and "pout." They "feel hurt" and give the impression that they have so much to put up with from a world that abuses them because they are misunderstood. They will go A. W. O. L. if they are denied a pass or if criticized, or they will seek any other convenient escape. When they resort to alcohol they get drunk easily and quickly and "pass out" early. They make frequent threats of suicide and occasional feeble attempts.

Occasionally they become aggressive—when no escape from their difficulties presents itself—but the reaction is a wild, childish aggression with no direction or purpose. They strike out blindly at any object rather than coordinate and direct their aggression at a specific object for a specific purpose. They lose their aggressive impulses quickly and become sullen and morose, and then frequently tearful and whining.

Their inadequacy is readily recognized by their fellow soldiers and they are teased and "played upon" until they either go "over the hill," or develop a blind aggressive episode which leads to their hospitalization for neuropsychiatric observation. Emotionally immature, childishly reactive in all situations, they are of no worth to the military service in even the most menial capacity.

This was the largest group of patients classified as constitutional psychopathic state.

The Chronic Aggressive Individual.—These personalities are the adult replicas of the chronic aggressive reaction patterns seen in children. Cleckley(6) describes them as cases of semantic insanity. Essentially narcissistic, they strive to make their environment conform to their personality rather than attempt to conform to their environment. They are constantly at odds with the world and express their discontent with aggressive threats and bizarre behavior reactions. They have a paranoid trend to their ideation—another expression of the essentially narcissistic nature of their personality. They are the "guard-house lawyers," the agitators and the boasters. They tend to act out their fantasies. Their lies are elaborate and well systematized and reflect an autistic elaboration of a situation not as it is, but as they wish it. The stubbornness which they display in insisting on the truth of their fabrications, even in the face of damning evidence to the contrary, approaches the delusional pattern of thinking.

They can, when it is to their own interests, put on a pleasant and affable demeanor, be ingratiatingly agreeable, and make a fine impression on new acquaintances, but they can not long maintain the "mask of sanity." It takes but little time for them to become dissatisfied with any situation or acquaintance, and they never hesitate to put new found friends to financial or social loss if the opportunity arises.

A study of their life history frequently reveals the same type of psychopathology

seen in the chronically aggressive reaction patterns of children—a complete inversion of the erotic instinct with no neutralization of the aggressive instinct by the erotic instinct. They live only for themselves and have no responsibility toward others or the least capacity for understanding their moral obligations to other members of their family or social constellations. They are belligerent misanthropes fighting the entire social and ethical structure of society, civilian or military, at every step of their march through life. In military life they soon begin to spend most of their time in the guard-house and often eventually desert.

Many seem to have no fear whatsoever, deliberately getting into situations certain to result in physical discomfort for themselves.

In actual combat these men have been known to distinguish themselves for bravery, the kind that "could go over the top, clean up a situation, and win a medal"(7). But such cases are rare and the turmoil they cause, the tribulations they inflict on their superior officers, as well as their poor effect on the morale of fellow soldiers during the months or years of training necessary to put them into a situation where they might at last make good is not worth the effort. They have no place in the military services.

A constitutional factor is seldom revealed by these persons and they do not belong in a general classification of constitutional psychopathic states. The better interpretation is to consider them as acquired personality defects.

The Overt Homosexual.—Only one such case was recorded in our series. He was a completely overt homosexual who developed a panic reaction shortly after induction because of a double conflict—separation from his male sexual partner and fear of discovery by fellow-soldiers.

Unclassified.—This group included various personality disorders such as moderately schizoid characters, mild cases of stammering, homesickness, mildly paranoid, rigid and effeminate personalities. Many of these were also seen in consultation and not admitted to the hospital. Although overt homosexuality presented no problem, several cases in which latent homosexuality appeared to be a prominent factor were seen. The presenting complaints of the latter were those of an anxiety state or a disturbance in the emotional sphere.

Mental Deficiency

The army induction standards on mental deficiency require the rejection of persons with an I. Q. below 60. The highest generally accepted limit for mental deficiency is an I. Q. of 75. Two of our cases had an I. Q. of 40. Few were over 60. All of the 31 cases in our series were the source of continual difficulties in their respective commands.

To determine intelligence levels we employed the Stanford revision of the Binet-Simon tests. This test is obviously too time-consuming for use on induction boards where the psychiatrist is called on to examine 75-150 men a day. However, any psychiatrist of average competency can tentatively spot 90 per cent of mental defectives through observation and questioning in one or two minutes and place them aside to be more adequately studied during brief lulls in the examinations. The Kent test can then be given. Although not as accurate as more complete tests, it is sufficiently adequate to confirm clinical impressions and serve as a basis for rejection. It is the authors' firm conviction, based on the experiences of studying these men, that the rejectable low limit for intelligence should be an I. Q. of 75. Although there are places in the army for soldiers with an I. Q. of 60 to 75, in practice they seldom arrive at these places until after they have caused more trouble than they are worth.

There was, of course, no excuse for the induction of the two imbeciles with an I. Q. of 40. Their deficiency was obvious to all who saw them, and one was a mongoloid imbecile.

Much has been written on the problems of the mentally defective in military commands. We need only add that our experiences confirm all that has been written.

As noted before, when mental defectives develop psychoneurotic manifestations they are either of the conversion type or the fugue reaction. Nichols has commented on this. Practically all hysterical palsies, comas or amnesias seen were in mental defectives.

Epilepsy

The disproportion between the number of cases of epilepsy seen in National Guard and Selective Service troops is best explained on the fact that the Guard troops were at this post from the time of induction whereas the Selective Service troops had at least three months service elsewhere. An epileptic under the tension of induction and the stress of initial orientation would likely have an attack within the thirteen weeks training period.

Epilepsy is the most difficult of all rejectible serious neuropsychiatric disorders to pick up on induction examinations. It was found that, as a defense reaction, these patients denied their affliction at time of induction hoping that in the army they could take their place as "men among men." The epileptic is notoriously hopeful of a cure, and many sincerely felt that army life would bring them relief from their convulsive seizures.

The problem of diagnostic confirmation following induction is a serious one. Many of these patients were admitted after a supposed seizure witnessed only by their fellow enlisted men. Some of these men had a history of infrequent convulsions, perhaps three or four a year. Nursing personnel is not always available for pituitrin-water balance tests, and this test is not *per se* always confirmatory. This necessitated prolonged hospitalization under observation, under conditions not conducive to frequency of convulsions, for confirmatory evidence. The availability of an electroencephalogram would have facilitated disposition of such cases immeasurably. It would also have served to aid in the diagnosis of questionable cases where petit mal and epileptic-equivalents were suspected.

Two patients, diagnosed and treated in civilian life as epileptics, were definitely shown to be suffering from attacks of hystero-epilepsy.

Discussion

1. The majority of cases classified as conversion neuroses and constitutional psychopathic states have certain features in common. The most striking of these is the apparent lack of super-ego characters. They express no regret over their removal from duty and they have no sense of responsibility (their past histories indicate none prior to entry into military service). Those with conversion symptoms accept their symptoms with relative complacency, at times bordering on apathy, while in the hospital. They protest vehemently at the prospect of improvement and the prospect of return to duty. Any appeals to patriotism, honor or self-satisfaction to stimulate a wish for recovery are entirely rejected. Resistance to any form of therapy is marked. They lack both the will (biologic potential?) and the desire to get well.

A second significant feature of this group is the immaturity of these men. Their suicidal threats are often expressed with a revenge motive comparable to the child's fantasy of "if you won't do what I want, I'll kill myself and then you will be sorry for what you did to me." They rarely request; they usually demand. Their childish sense of omnipotence persists to a marked degree in their relationship with others, yet, paradoxically, they accept their inadequacy and inefficiency in performance of duties with equanimity.

2. Disposition of a neuropsychiatric case involves a great expenditure of time and effort. A long period of hospitalization, frequently repeated hospitalization, is often necessary once such men are actually in military service. Social service reports are frequently necessary and entail much delay. Disposition of the cases classified as constitutional psychopathic states and mental deficiency require Section VIII boards after repeated trials at various duties under the provisions of W. D. Circular Letter 66, 1941 series. Company and regimental commanders pressed, now more than ever, by the exigencies of intensive active training can give little time to these details and perhaps the burden of Section VIII boards for these cases might be delegated to another authority. From our experience, it would facilitate matters immensely. Mental deficiency is a medical problem, easily and rapidly diagnosed, and the question of disposition through medical channels might be studied.

The actual percentage of neuropsychiatric

casualties in our total command was not high, approximately 1.5 per cent in a ten-month period of peace-time training. Yet each case involved several times more time and expense per patient than any other patient category.

The majority of patients seen were of a type with which the psychiatrist in civilian practice is not familiar, but a type readily recognizable by a psychiatrist with more than three months service on the psychiatric wards of a military hospital. Final examinations prior to induction by psychiatrists trained in military psychiatry would undoubtedly lower the number of men coming into the armed services and who soon thereafter become problems for disposition on neuropsychiatric wards.

3. With the declaration of war a tendency spread to be more lenient on induction standards and to be less prone to discharge men because of disability. Part of this reaction was undoubtedly emotional, and part practical where physical illness was concerned. Psychiatric disability belongs in a different category. A person who cannot adjust himself in civilian life or under the mild stresses of peacetime training, has no chance of adjusting under wartime conditions. In time of war more and more discrimination and judgment must be used and fewer potential psychiatric problems inducted, lest a repetition of the incident leading to General Pershing's cablegram of July 1918 result:

> Prevalence of mental disorders in replacement troops recently received suggests urgent importance of intensive efforts in eliminating mentally unfit from organization of new draft prior to departure from the United States.

BIBLIOGRAPHY

1. Simon, A., Hagan, M., and Hall, R. A study of specific data in the lives of one hundred and eighty-three veterans admitted to St. Elizabeths Hospital. War Medicine, 1: 387-391, May 1941.

2. Bateman, J. Fremont. Differential diagnosis of schizophrenia and schizophrenic reaction-types. Ohio State M. J., 1-4, August 1935.

3. Margolis, H. M. Constitutional biologic inadequacy. Clin. Rev. Pgh. Diag. Clinic, Paul B. Hoeber, Inc., N. Y., 1937.

4. Spillane, John D. Observations of effort syndrome. Brit. Med. J., pp. 739-741, Nov. 30, 1940.

5. Wood, Paul. Effort syndrome. Brit. Med. J., May 24, 1941.

6. Cleckley, Hervey. The mask of sanity. C. V. Mosby Co., 1941, St. Louis, Mo.

7. Porter, Wm. C., quoted by Dunn, Wm. H. The psychopath in the armed forces. Psychiatry, 4: 251-259, May 1941.

PSYCHOGENIC DISORDERS AND THE CIVILIZATION OF THE MIDDLE AGES[1]

ALFRED GALLINEK, M.D., New York, N. Y.

Introduction

The symptomatology of hysteria, far from being constant, varies with the times and social environment. This is shown by a study of the history of hysteria and related neurotic disorders. The types of hysteria observed and described in the last century, *e.g.*, by Charcot, are known to be widely divergent from those of today. However, this change in symptomatology is slight when compared with the change in the social and cultural significance of hysteria in different epochs.

Today hysteria and neurosis are regarded essentially as shortcomings—a liability. We are aware that artists and their ilk may be psychopathic, that genius and talent often go hand in hand with a psychopathic personality. This psychopathic element is ever a cloud upon the personality of the genius. A hysterical or neurotic reaction or personality is but rarely instrumental in attaining significant cultural goals. Frequently artists seek to rid themselves of their hysterical or neurotic traits by means of psychotherapy. The fundamental cultural achievements of our time are not related in any way to hysterical or neurotic disturbances. An attack of hysteria has never furthered or made practicable the smashing of atoms, the discovery of a serum, aircraft construction or a mathematical theory. It will be developed that in an era different from our own, hysteria and neurosis influenced the birth of culture and its growth; that those who supported and contributed to this culture, although congenitally not hysterical, frequently hysterized themselves in order to be equal to their task. The predominantly religious character of medieval culture needed ecstasy and hysteria to produce rapture. Further, a definite type of hysteria evolved, that of visionary revelation.

If we concern ourselves with medieval hysteria, and therefore of necessity with medieval man, we must understand from the very inception how totally different medieval man was from man of today. History has assumed too long that human psychology is static—always contemporary. Just as the artist of the medieval and renaissance periods portrayed the people of antiquity in the clothing and environment of the artist's own time, just so does today's historian endeavor to explain earlier developments chiefly from an economic angle. Economic elements undoubtedly played a part, but they cannot account fully for enterprises such as the Crusades, particularly not for the Children's Crusade. It must be stressed that the differences in human beings of various cultural epochs are by no means proportional to the length of time which has elapsed between those eras. The premise that an ancient Egyptian and modern man are poles apart merely because of the centuries of time separating them, is false. The early Middle Ages, early Christianity, were periods of cultural prime in contrast to the fully ripened civilization of Antiquity. The Graeco-Roman is appreciably closer to the man of today than to a man of the medieval period. To divorce medieval hysteria from its time and place is not possible. We must examine it as the product of its time and within the framework of its period. To begin with, hysterical manifestations of medieval personalities as reported in contemporary sources will be presented in the following.

Hysterical Manifestations in Various Outstanding Medieval Personalities

1. *St. Columba* (6th Century).[2]

St. Addaman, Columba's biographer, writes the following about St. Columba:

> By the revelation of the Holy Ghost he often saw the souls of certain righteous men borne by angels

[1] From the department of neurology, Columbia University College of Physicians and Surgeons, and the Neurological Institute of New York.

[2] The Life of St. Columba by St. Addaman. Translated by Wentworth Huyshe. The Educational Organization of Ireland.

to the highest heavens. But many a time also and very often he saw other souls of reprobates borne by demons to Hell.

In some contemplation of Divine Grace he beheld even the whole world as though collected in one ray of the sun laid open to his sight, the capacity of his mind being miraculously enlarged. At another time at night in an ecstasy of mind he saw an angel of the Lord sent to him who held in his hand a book of glass of the ordination of kings.

When one of his monks in Iona died, Columba saw holy angels warring in the air against the hostile powers over the soul of the deceased monk. Columba did not like to talk about his visions. His biographer states:

But this also should be delingently noted, that the same venerable man in no wise allowed to be brought to the attention of men many holy secrets revealed to him . . . ., but concealed from others and that for two reasons . . . ., namely that he might avoid vainglory and that he might not attract overwhelming crowds.

Thus psychopathological mechanisms are an asset, an aid in the development of a great personality. They do not consist of spiritual, introspective meditation but are based on true visionary experiences. The biographer emphasizes particularly that Columba saw the angel with his bodily eyes. Once he remained three days and three nights without food and drink while he

saw openly manifested many secrets hidden since the beginning of the world and some obscure and difficult passages of the sacred Scriptures became plain.

This exceptional ecstatic state has a direct bearing on Columba's theology. In no other characteristic does the personality of Columba correspond to our present day concept of a hysteric. His biography reveals him as a forceful personality of great energy and vigor. Born on the Insula Sanctorum of royal parentage about one hundred years after the Roman Legions had been withdrawn from Britain, and while Justinian was emperor of the East, Columba was the founder of many churches and monasteries, among them the famous Iona. He was outstanding as a missionary, fighter, also author and poet, member of the Order of the Bards and played a great rôle in the political history of his country, crowning her kings.

2. *St. Gall* (6th Century).[3]

Similar to Columba was St. Gall, famous as a founder of convents, missionary and fearless exponent of Christian philosophy and moral integrity at the court of the Merovingian Kings.

In the silence of the night, as Gall was casting his nets into the lake, he heard a demon calling with loud voice from the summit of the nearest mountain to some fellow of his who seemed to inhabit the water.

A dialogue of the demoniacal voices followed. Demons are the old heathen gods whom St. Gall the missionary fought and tried to eradicate while yet believing in their very existence and fear-inspiring reality. Naked female demons appeared before him near the river. His visions symbolize his frustrated sex desires and his repressed fear of the old gods. He conquered them by prayer.

3. *Symeon Junior of St. Mamas* (970-1040).[4]

Symeon was a distinguished Byzantine theologist, author of a number of theological writings.

I saw Him again actually in my house . . . . and He arose suddenly, united Himself to me, inexplicably, as fire forges iron, as light penetrates glass, and He made me as fire, and as light, and I became that which I had once seen, and that which I had gazed upon from afar, for I knew not, nor do I know now, how He entered into me, nor how He joined Himself to me. But now that He and I are one, that I have united myself with Him, how can I tell you how He is? I fear that were I to describe it, you might not believe it, and by your ignorance commit blasphemy, my brother, and lose your soul. He and I are one, now that I am united. But how shall I call myself, that was united with Him? Again I see the Light, again I see the Light in all clarity, again the heavens open, again it disperses the night, again it reveals all, again it alone appears, again it carries me away from all worldly things, tears me away, and He, superior to all heaven, reenters my soul, without leaving heaven, without disturbing the night . . . . and into the depths of my heart, O sublime Secret, pours the Light and uplifts me, and I who stood in the midst of all things worldly, stand detached, perhaps even of my body.

[3] The Life of St. Gall by Walafrid Strabo, edited by Maud Joynt. Society for the Promotion of Christian Knowledge, New York and Toronto, 1927.

Paul Th. Hoffmann. Der mittelalterliche Mensch. F. A. Perthes, Gotha, 1922.

[4] Migne, Patrologia Graeca, Vol. 120. Paris, 1864.

Martin Buber. Ekstatische Visionen. Eugen Diederichs, Jena, 1909.

4. *St. Hildegardis of Bingen* (1098-1179).[5]

St. Hildegard, a contemporary of Bernard of Clairvaux and Barbarossa, embodied and represented both the ecclesiastical and secular knowledge of her time. She made important contributions to the civilization of the century in which she lived. Her writings and interests covered theology, medicine, natural science and lyric and dramatic poetry. She was of gentle birth, entered the convent in early youth and became abbess. She was the author of such diverse writings as lyrical responses of great beauty, of sequences entitled "O Virgo ac diadema," a play named "Ordo virtutum," and a secret language and code. Travelling widely, she preached to large audiences. Her correspondence was as voluminous as that of the 18th century philosophers and encyclopedists, and was addressed to the emperor, popes, St. Bernard, and to all the influential people of her time. She presented the natural science of her era in her book "Physica," medical science in "Causae et Curae." Her principal work "Scivias" (Sci vias Domini—Know the ways of the Lord) is most interesting. The book deals with twenty-six visions of theological-mystical-prophetical nature, discusses a great number of themes such as salvation, redemption, sanctification, baptism, confirmation, communion, confession, penance, the Church, etc. Her contemporaries were deeply impressed with the book. Undoubtedly the book is based on actual visions, although they were systematized and reclassified in her writings by the author and her literary co-workers. From early youth Hildegard had visions. She describes her first vision: Suddenly she heard a voice addressing her:

> Oh thou infirm creature, dust of dust and ash of ashes, speak and write that which thou seest and hearest, speak not and write not in accordance with human style, but in the fashion you perceive it from God.

Simultaneously she felt as though flooded with a light which was as a warming flame. In a letter, written at the age of seventy, to the monk Guibertus of Gembloux, she said:

> In this light upon God's command, my soul soars to the high heaven, in the air and to the clouds, to the farthest places and their inhabitants. I see everything in its minutest detail . . . . everything stands revealed before my spirit, I see it day and night, waking and dreaming, but often sick to death and infinitely weary.

Paralyzed, she was bedridden for a long time, but when compelled to undertake a journey to save the funds of her convent, the paralysis suddenly disappeared. She sensed renewed strength and mounted her horse. During the course of another illness, she was told in a vision to rise and to proclaim the word of God in various convents. Her pain subsided. When she hesitated the pains recurred, until she obeyed God's command. Acoustic hallucinations always accompanied her visions.

> I heard a voice, whose loud cry reverberated over the earth.

The voice explained the visions in the manner of a newsreel commentator.

> My soul is uplifted in this vision, by God's will, to the heavens, to the changing atmospheric zones. It is diffused among the various peoples, no matter how far removed, in distant lands and places.

Overawed by the visions, she trembles and is faint, then she feels that a hand caresses her, and strengthens her again (Scivias, p. 54). The hallucinatory experiences thus touch the tactile sphere as well as the acustic and optic. And yet, in other passages, she disavows the acustic and optic characteristics of the revelations, apparently the manifestations were incorporeal (as in a letter of hers to Guibertus):

> All this, I see not with my external eye, hear it not with my external ear, nor do I feel it with the perceptions of my heart (cogitationibus cordis) nor yet by the concerted action of my five senses (ulla

[5] Hildegardis Causae et Curae. Teubner, Leipzig, 1903.

Johannes May. Die Heilige Hildegard von Bingen. Koesel & Pustet, Muenchen, 1929.

Hildegard von Bingen. Scivias. St. Augustinus Verlag, Berlin, 1928.

Vita Sanctae Hildegardis. Auctoribus Godofrido et Theodorico, Monachis. Migne. Patrologia Latina, Vol. 197. Paris, 1855.

Cardinal Jean Baptiste Pitra. Analecta Sanctae Hildegardis. Typis Sacri Montis Casinenses, 1882.

H. Fischer. Die heilige Hildegard von Bingen. Muenchener Beiträge zur Geschichte der Medizin, Muenchen, 1927.

collatione quinque sensuum meorum), but I see it all in my soul.

Despite this infringement on the sensory character of her visions, in another passage, it is said:

That which I do not see, that I know not, for I am ignorant.

Awake in body and soul, I heard a voice speaking. In the year 1141 of the incarnation of the Son of God, Jesus Christ, when I was 42 years and 7 months old, there descended from the open sky a fiery light accompanied by gleams of lightning. It flowed through my brain and glowed in my breast and heart as a flame. Thus suddenly the meaning of the Scriptures was made clear to me . . . . but I did not acquire thereby the ability to translate the words, nor any knowledge of syllabification or grammatical cases and tenses (Scivias, p. 23).

I perceived a very great radiance out of which a heavenly voice resounded: "Oh, thou infirm human, ashes to ashes and dust to dust, say and write what thou seest and hearest" . . . . and again I heard a voice from Heaven: "Proclaim the miracles which thou hast experienced, write them down and speak. . . . ."

No doubt can exist as to the practical value of these hallucinatory revelations. They contribute to the personal philosophy and the theology of the author. Thirteen visions are needed to explain in orderly fashion the mystery of Christ and the history of the redemption. The entire mystic symbolism of the period lives in these visions and they kindled the mystic symbolism of succeeding centuries.

An important and influential personality, Hildegardis employed hysteric-psychogenic mechanisms in order to bring her talents to their fullest flowering.

5. *Francis of Assisi* (†1226).[6]

His is everlasting fame as the founder of the Franciscan order and as the Saint who preached to the birds and to the wild beasts. He was God's minstrel, the jongleur of the Lord, the joculator Dei, poet and Saint and shining knight. He shows one particular feature of religious medieval hysteria which might be called theopathy, the suffering in, by and for God, a suffering containing profound joy, joyous sorrow and sorrowful joy in God. A contemporary source relates:

From that hour his heart was so wounded and melted at the memory of his Lord's passion, that henceforth, while he lived, he carried in his heart the marks of the Lord Jesus. Again he was seen walking . . . . wailing aloud, and in response to the inquiries of a priest he answered: "I bewail the passion of my Lord Jesus Christ which it should not shame me to go weeping through the world."

Often as he rose from prayers, his eyes were full of blood because he had wept so bitterly.

6. *Aegidius of Assisi* (†1262).[7]

Aegidius of Assisi was a disciple of St. Francis. Of him it is reported:

In the sixth year after his conversion, one night the hand of the Lord touched him. While he prayed fervently, he was flooded with such divine consolation as made him believe that it was God's wish that his soul quit his body so that he might gaze upon its secrets in all clarity. He began to feel a numbness congealing his body, first his feet and then further, until his soul escaped. And standing thus, outside his body, apparently in accordance with the will of Him who endowed the body with a soul, the soul rejoiced in magnificent beauty . . . . in which the soul viewed herself, for she was very gentle and very pure, beyond all measure, as he himself explained before his death. Then was this holiest of souls led away to see the divine secrets, which he never wished to disclose.

7. *Mechthild of Magdeburg* (1212-1277).[8]

She was born of noble family and was well acquainted with the courtly literature of her time. She wrote a book, "The Flowing Light of God" and deeply influenced the ecstatic tendencies of her time and following centuries. Her book is written in the style of courtly medieval poetry, clearly revealing the carnal elements in her amor Dei, together with the above mentioned theopathic factor. The soul says:

"Thou hast hunted and taken bound and wounded me, never shall I heal." "Lord, I bring Thee my treasure which is greater than mountains, wider than the world, deeper than the sea, higher than the clouds, more beautiful than the sun . . . ." "Image of My Divinity, enabled by My manhood, adorned by My Holy Spirit, how is thy treasure called?" "Lord, it is called my heart's desire, where shall I lay it?" "Thou shalt lay thy heart's desire nowhere else than in My divine heart and on My human breast."

8. *Henry Suso* (1259-1366).[9]

Henry Suso entered the Dominican order at 13, studied under the famous mystic,

[6] Henry Osborn Taylor. The Medieval Mind. Macmillan & Co., London, 1938.

[7] Martin Buber, *l.c.*

[8] Henry Osborn Taylor, *l.c.*

[9] Martin Buber, *l.c.*

William James. The Varieties of Religious Experience. Longmans Green & Co., New York, 1925.

Master Eckard, lectured in theology, and was a famous preacher of the Dominican convents. He was influenced deeply by Thomas Aquinas. He was one of the greatest mystics and the author of numerous works. His autobiography, written in the third person, appears in his most important book, "Exemplar." We quote:

At the same time, because of great suffering which he endured he was depressed. As he stood there thus disconsolate and deserted, his soul was enchanted, whether within or without his body. There he heard and saw what cannot be expressed in any tongue. He was without form, and yet he had the delight of all form within him. A sensation of calm, of tranquillity, it was as a bursting forth of the sweetness of eternal life into the present. . . . . This exalted trance may have lasted a half hour, or an hour.

In another vision:

There came a youth, who bore himself as though he were a divine minstrel sent to him by God. With him came many proud youths . . . . but he alone had more dignity than the others, as though he were an angel-prince. This youth approached him cheerfully and said, that they were come to him from God, to bring him divine joy in his affliction, and speaking further said, he should cast out all thought of grief and join them, in their heavenly dancing. They joined hands as the youth started a gay song about the Christ Child. And as he heard the beloved name of Jesus resound so sweetly, his heart and soul grew cheerful, so that he lost all remembrance of his suffering. Now he saw with joy how freely they leaped and capered about. . . . . This dance form was not one that we know in this world. . . . . This and other celestial consolation was granted him mostly at those times when he was surrounded by the greatest suffering. It became therefore so much easier to bear.

Thus, here too, the theopathic symptom, the amalgamation of physical pain and spiritual joy, is obvious.

9. *Catherine of Siena* (1347-1380).[10]

Catherine of Siena was the patron saint of the town of Siena. She had a gift for statesmanship and controlled the politics of the Holy See through Gregory XI. It was upon her instigation that the pope returned to Rome out of the captivity of the Church at Avignon. Her writings comprise five volumes. Her father confessor, Raimund of Capua, writes about her:

It seemed to her that the Eternal Bridegroom came in his usual way to her, took her heart out and left her, leaving her entirely without heart. This vision was so persistent and left such a physical impression that in her confession she said that she had no heart in her breast.

This experience was followed by another in the course of which her heart was returned to her. The somatic sensations are completely integrated in the trend of her religious experiences, confirming and corroborating them.

10. *Katherine of Genoa* (1447-1510).[11]

She was the daughter of the Viceroy of Naples, of the famous Genoese family of Fieschi. She was famous as mystical prophetess, author, and during an epidemic proved herself a fearless nurse and good Samaritan. Her dissertation on Purgatory made a deep impression on her contemporaries. In her biography the following is told of her:

She would press thorny rose twigs in both her hands, and this without any pain. She remained paralyzed in one hand and one finger of the other hand. . . . . On some occasions she could not move the lips or the tongue or the arm or the leg. For a day and a night, her flesh could not be touched because of the great pain that the touching caused her. She was so sensitive that it was impossible to touch her very bedclothes or the bedstead or a single hair on her head because in such case she would cry out as though she had been grievously wounded.

Her biography is full of repeated reports of anæsthesia, hyperæsthesia, akinesis, hyperkinesis, longing for and revulsion from certain kinds of food.

Whilst her mouth was being bathed, she exclaimed, "I am suffocating," and this because a drop of water had trickled down her throat, a drop which she was unable to gulp down.

She saw a melon and had a great desire to eat it, but hardly did she have some of it in her mouth, when she rejected it with intense disgust.

There can be no doubt as to the hysterical nature of her various, manifold and always transitory symptoms.

The Medieval World

World-View.—It is impossible to understand and evaluate medieval man, his hysteria and neuroses, without a knowledge of his spiritual and social environment, the world aspect. Augustine's treatise on the City of God (*civitas Dei*) influenced greatly the

[10] Martin Buber, *l.c.*

[11] Baron Friedrich v. Huegel. The Mystical Element of Religion as Studied in St. Katherine of Genoa. Dent. & Sons, London, 1923.

medieval concept of the world. The terrestrial city, civitas terrena, and the celestial city, civitas celestis, are contrasted, and they were as far apart as Heaven and Hell. But by the grace of God a bridge was wrought and thus it became possible to convert earthly into celestial existence. The instrument of this mutation was the Church, the ecclesia catholica. The Church is the connective link between heaven and earth; she tries by dint of constant labor to bring about the assimilation of the evil mundane city to the celestial city of God. The earth is wicked and fundamentally corrupt because of Adam's original sin. Because of this original sin the soul is pulled down, into the depths, to the fallen angels, the real master of the terrene city is not God, but the devil. But the kingdom of God, in the shape of the Church, reaches the evil world. Only she leads the way to salvation. Only through her does divine mercy descend from the celestial spheres to earth.

Life Purpose.—It was the aim of man to leave all things worldly as far behind as possible, and already during lifetime to approach the kingdom of Heaven. The aim was salvation. Salvation was the Christian master motive (Taylor, *l.c.*). The gospel of the Church was the gospel of salvation unto eternal life (Taylor, *l.c.*). Man stood in constant fear of not achieving this aim, this goal which was the greatest good, the summum bonum, the eternal life. Pessimism covers like a dark cloud the earthly life. All that could be reached on this earth was, according to Augustine, solatium miseriae, a consoled misery of sin, but in the eternal life gaudium beatitudinis could be expected, but only by those who were not condemned. The condemned ones had to look forward to nothing but eternal misery, miseria sempiterna, and Augustine devotes a whole book to the sempiternal non-purgatorial punishment of the damned, whom even the intercession of the Saints will not save (Taylor, *l.c.*). Augustine's theory was elaborated and broadened by Gregory the Great, and the element of fear was still more strongly emphasized and impressed upon the mind. For fear of losing the only aim, salvation, Gregory the Great developed the doctrine of penance and its three elements: contritio, conversio mentis, and satisfactio. The ideal man of the Middle Ages was free of all fear because he was sure of salvation, certain of eternal bliss. He was the saint, and the saint, not the knight nor the troubadour, is the veritable ideal of the Middle Ages.

The Saint as the Ideal Medieval Man.—The ideal of sainthood comprises the highest moral, spiritual and social ideals of the medieval centuries.[12] As the sophist in the Periclean era, as the stoic in the late Greek period, as the martyr in the dawning Christian era, so was the saint in the Middle Ages the very essence of the spirit of his time. He had overcome original sin, he had divested himself of all things worldly while still of this world. With his feet still on earth, and with a halo already in heaven, the saint, as well as the Church, was the connective link, encouraging and consoling, between the distant glory of the Kingdom of Heaven and the fear and sin-ridden earth.

Asceticism and Monasticism.—To attain that which the saint had achieved was everyman's desire. The path of salvation led away from the world, it was the way of asceticism and monasticism. "My kingdom is not of this world"; the ascetic and monastic way of life led into that other World The regula of St. Benedict[13] was the master motive for all those who were longing for the "higher life." The monastery was the place where the monk had to labor to attain salvation. The aim was salvation and the realization of the supernatural and the closer conscious union of the soul with God. This aim was to be attained by removal of everything that might stand in the way of the elevation of the mind. The physical world was but a let and a hindrance, the soul sought to liberate itself from the body. The more tortured the body, the more dissociated the soul from this pain racked body, so much the simpler the heavenward flight of the soul. Those for whom the cloister was not sufficient, had themselves immured for life in narrow cells. The cells were so small that

[12] John M. Mecklin. The Passing of the Saint. The American Journal of Sociology, Vol. 24, No. 4, January 1919.

[13] The Rule of St. Benedict, with an Introduction by Cardinal Gasquet. Chatto & Windus, London 1936.

it was impossible to stand upright in one. A stone served as a pillow, and scanty food was presented through a tiny window. These recluses sometimes had themselves put in irons (Hoffmann, *l.c.*).

The Roots of Medieval Hysteria.—Only by means of a tremendous repression was it possible to achieve the ascetic ideal. The greater number of those who strove to sublimate Eros into Caritas did so at the expense of their mental equilibrium. The renunciation not only of sex activity, but also of sexual dreams and the very existence of such urges, built up a colossal feeling of guilt. On his death bed the monk Notker Labeo accused himself of having had erotic dreams (Hoffmann, *l.c.*). Instincts and desires, conscious or unconscious, were identified without hesitation with all things earthly, with the elements of civitas terrena, and thus with the devil. Suppression was the goal and path of Salvation. A permanent or at least transient spiritual enthusiasm was necessary to attain the sublime standards and to be able to check those personality elements which had to be suppressed and repressed. A great emotional stress was the result of this situation and at the same time served the purpose to attain the desired aim. Hysterical syndroms were not only the result but the tools to reach the state of mind necessary for salvation. Quiet contemplation, wild emotions and wilful production of hysterical mechanisms (hysterization) all serve the same purpose. Not only the ascetic ideal but the contemplative ideal also reached its perfection during the medieval centuries. St. Petrus Damiani says:

> Whoever would reach the summit of perfection, should keep within the cloister of his seclusion, cherish spiritual leisure and shudder at traversing the world as if he were about to plunge into a sea of blood, for the world is so filthy of vices that any holy mind is befouled even by thinking about it. (Taylor, *l.c.*, p. 385.)

It is but a short step from the calm contemplation of God and the kingdom of God to the contemplation of one's own sinfulness, followed by violent emotions of penance. Again we quote St. Petrus Damiani:

> From the fire of divine love rises the grace of contrition, and from the contrition of tears the ardor of celestial yearning is increased. . . . . Seclude thyself from the tumults of secular affairs and often even from the talk with thy brethren. Cage off the cares and anxieties of mundane action. Clear them away as a heap of rubbish which stops the fountain's flow. As water in a cavern of the earth wells up from the abyss, so sadness wells in the human heart from contemplation of the profundity of God's judgment. . . . . Sadness is the material of tears. (Taylor, *l.c.*, p. 387.)

It is obvious here that quiet meditation is transformed immediately into turbulent emotions, thus achieving the hysterization of the individual, the hysterization which in turn will be the tool of deeper and higher religious experiences and achievements.

Medieval and Ancient Ideals.—The tendency depicted toward asceticism, monasticism and meditation are not exclusively of medieval origin. Porphyrius relates of Plotin, that he was ashamed of his body. Jamblichos, a neoplatonic, wrote on abstention from meat (Taylor, *l.c.*, pp. 43-45). The contemplative tendency was present in Greek philosophy, even asceticism is intimated. The motives of these tendencies in the Middle Ages and in ancient times are completely different. In ancient times, contemplation and asceticism were practised for their own sake, for mundane purposes, not as a means to an end (salvation); in ancient times, they are separate and distinct from the emotions to which they are bound in the Middle Ages. The lofty ideas of holiness and perfection and the depths of sin, Hell and evil, eternal joy and eternal pain had been unknown to the ancient mind. Placidity and prudent moderation were the ideal of the Graeco-Roman. The "nothing in excess" philosophy of Socrates continued throughout the Epicurean and Stoic philosophies far into the period of the emperors; it was the ideal of personalities like Seneca and Marcus Aurelius. They lived in an air of clear and cool serenity without the exultations which characterize the medieval mind. The equanimity of the ancient philosophers and heroes can be confronted with the terror-stricken soul of medieval man, whose emotions are ruled by pity for his own sinfulness and who constantly has the gates of Hell as a looming danger in front of his spiritual eyes. The beauty of the soul, the ideal of Socrates and Plato, was in ancient times only the mirage and the sublimation of the beauty of the body (Taylor, *l.c.*). The medieval beauty

of the soul was not only free of the body but antithetic to it, and the beauty of the soul was for medieval man not an aim in itself but only a necessary prerequisite for salvation. The emotion of love, an ideal in itself for Socrates and Plato, was of value to the medieval man only if directed towards God and away from the body. Sexual love, even when glorified at the medieval centuries' most worldly period, had to end in sheer tragedy and disaster because of its lack of godliness (Tristram and Iseult). The ancient ideals, in short, are ideals of this world, the medieval ideals, centered around the joys of life and the terrors of the Judgment Day, are concerned with the hereafter.

Ancient Hysteria.—It is to be assumed that numerous hysterical and psychoneurotic elements are to be found in the scant mystical and ecstatic movements and institutions of antiquity (oracles, the cult of Bacchus, and the various mysteria).[14] Be that as it may, these institutions had but slight influence upon the cultural development of antiquity. No great personalities were produced within the scope of these institutions. Ancient civilization is characterized by philosophers, sophists, poets, historians, sculptors and architects, not by the ecstatic or the mystic. Later, in the late ancient period, the ecstatic-mystic-orgiastic cults came more strongly to the fore, but their culture significance is not comparable to that of medieval ecstasy.

Hysterization.—That medieval man deliberately, consciously hysterized himself in order to enter into these overwhelming mystic and ecstatic states, will be proven from contemporary sources. In the case of Symeon Junior of St. Mamas, the state of religious trance is described above in his own words. Symeon tells us not only about the trance itself, but also how he was transported into this state.

> Leave me alone, locked in my cell . . . . step back and withdraw. Let no one knock at the door, let no one speak. Let no relative or friend visit me. Let no one disturb my meditation upon the good and the beautiful. Let no one bring me food or drink. . . . . No longer do I wish to see the light of this world, nor the sun itself, nor anything which is upon the world. For I behold my Lord, I behold the King, I behold the source of all beauty, the origin of all things. I see the beginning, which lacks beginning. As I beheld Him, I lost consciousness. You, who are ruled by the senses, grant me not only that locked in my cell, I remain there, but also to hide there as in a grave, and to lead a life outside the world—beholding my Lord and my Creator—then shall I wish to die through his Love but I will know absolutely that I will not die.

Suso, in his autobiography quoted above, described not only his extraordinary experiences, but also gave a detailed description of the technique he used to mortify the flesh. This part of his autobiography, as quoted by James,[15] reads as follows:

> He was in his youth of a temperament full of fire and life; and when this began to make itself felt, it was very grievous to him; and he sought by many devices how he might bring his body into subjection. He wore for a long time a hair shirt and an iron chain, until the blood ran from him, so that he was obliged to leave them off. He secretly caused an undergarment to be made for him; and in the undergarment he had strips of leather fixed, into which a hundred and fifty brass nails, pointed and filed sharp, were driven, and the points of the nails were always turned towards the flesh. He had this garment made very tight, and so arranged as to go around him and fasten in front, in order that it might fit the closer to his body, and the pointed nails might be driven into his flesh; and it was high enough to reach upwards to his navel. In this he used to sleep at night. Now in summer, when it was hot, and he was very tired and ill from his journeyings, or when he held the office of lecturer, he would sometimes, as he lay thus in bonds, and oppressed with toil, and tormented also by noxious insects, cry aloud and give way to fretfulness, and twist round and round in agony, as a worm does when run through with a pointed needle. It often seemed to him as if he were lying upon an ant-hill, from the torture caused by the insects; for if he wished to sleep, or when he had fallen asleep, they vied with one another. Sometimes he cried to Almighty God in the fullness of his heart: "Alas! Gentle God, what a dying is this! When a man is killed by murders or strong beasts of prey it is soon over; but I lie dying here under the cruel insects, and yet cannot die. The nights in winter were never so long, nor was the summer so hot, as to make him leave off this exercise. On the contrary, he devised something farther—two leathern loops into which he put his hands, and fastened one on each side of his throat, and made the fastenings so secure that even if his cell had been on fire about him, he could not have helped himself. This he continued until his hands and arms had become almost tremulous with the strain, and then he devised something else; two leather gloves; and he caused a brazier to fit them all over with sharp-pointed brass tacks, and he used to put them on at

[14] T. K. Oesterreich, Possession. Kegan, Paul, Trench, Trubner & Co., London 1930.

[15] *l.c.*

night, in order that if he should try while asleep to throw off the hair undergarment, or relieve himself from the gnawings of the vile insects, the tacks might then stick into his body. And so it came to pass. If ever he sought to help himself with his hands in his sleep, he drove the sharp tacks into his breast, and tore himself, so that his flesh festered. When after many weeks the wounds had healed, he tore himself again and made fresh wounds.

He continued this tormenting exercise for about sixteen years. At the end of this time, when his blood was now chilled, and the fire of his temperament destroyed, there appeared to him in a vision on Whitsunday, a messenger from heaven, who told him that God required this of him no longer. Whereupon he discontinued it, and threw all these things away into a running stream.

Suso furthermore made himself a cross with thirty protruding iron needles and nails which he bore on his bare back day and night.

The first time that he stretched out this cross upon his back, his tender frame was struck with terror at it, and he blunted the sharp nails slightly against a stone. But soon, repenting of this womanly cowardice, he pointed them all again with a file, and placed once more the cross upon him. It made his back, where the bones are, bloody and seared. Whenever he sat down or stood up, it was as if a hedgehog-skin were on him.

In the beginning of the 13th century, Jacques de Vitry[16] in a letter of Fulco, Bishop of Toulouse, described a colony of saintly women:

You saw some of these women resolved with such a particular and marvelous love toward God that they languished with desire and for years had hardly been able to rise from their cots. Their souls were melted with desire. Sweetly resting with the Lord, as they were confirmed in the spirit, they were weakened in body. . . . . The cheeks of one were seen to waste away, while her soul was melted with the greatness of her love. . . . . Others were drawn with such intoxication of spirit that in sacred silence they would remain quiet a whole day . . . . with no sense of feeling for things without them, so that they could not be roused by clamor or feel a blow.

The theopathic, the libidinous and the contemplative element are quite evident in this description. It is clearly said that the aim of these mortifying practices which resulted in psychogenic symptomatology was to come closer to God. A similar technique was used by Dionysius the Carthusian who is the celebrated doctor ecstaticus of the Church. He was a friend of Nicolas Cusanus and the most perfect type of the medieval enthusiast. He lived during the 15th century and wrote 45 quarto volumes. His writings were so valued that even in the succeeding century it was said: Qui Dionysium legit, nihil non legit (who has read Dionysius has left nothing unread). He summarized and presented the entire theological and dogmatic knowledge of his era. He was an indefatigable worker. He ate spoiled food as a specific to induce hysteria. He ate butter only if infested with worms, cherries that were wormy, spoiled fish. He saw demons fill the room, and heard the devil call him a stuttering fool. He was ever in contact with the dead, and the dead appeared before him hundreds of times. The visionary experiences were often dramatic. He saw his father in purgatory, and accomplished his redemption.[17]

Symbolism.—In modern psychology hysteria and symbolical expression are closely connected. It is difficult for modern man to understand the significance of symbolism in the medieval world. "Away from reality" was the ever recurring theme. In addition to asceticism, meditation and hysterical rapture, symbolism was just another means of escape. The whole world was but a symbol. "Videmus nunc per speculum in enigmate tunc autem facie ad faciem" (Ad Cor. I, 13, 12). The concept of world and life was not based on a genetic-dynamic-causal theory. Not cause and effect were the poles of the medieval world, but meaning and aim. Symbol and allegory helped to explain this meaning and aim. The infinite and universal toward which medieval man strove constantly and which surrounded, touched and oppressed him always, could be understood only through symbols. The cathedrals, whose architecture is crowded with symbolism, were one expression of this symbolic conception, hysterical conversion was another. The symbolic betrothal of the nun to Christ, the symbol of the soul as the bride of Christ, show how closely symbolic expression and hysterical emotionalism or its sources are linked together. By allegory and symbol, hostile worldly nature was nullified. Base reality was rendered unreal by symbol and allegory, and transformed into a higher

[16] Quoted after Taylor, *l.c.*

[17] Huizinga. De Herfstijd van de Middleeuwen. Leyden 1923.

reality. The leaning toward the symbolical and the allegorical knew no limit. The psalter, a book of Hebrew songs with ancient Jahveh-cult motives and a touch of Babylonian-Assyrian civilization, was, without changing one jot or tittle, desensualized and spiritualized during the Middle Ages into a maze of mystical secrets. In words of mundane reality, the 128th Psalm praises worldly goods, the happiness of the home, peace, prosperity and children. The psalm says: "Happy shalt thou be and it shall be well with thee." The monk Notker Labeo follows the teaching of St. Augustine when he says, that this sentence refers to heavenly reward for earthly labors. Symbolic interpretation spiritualizes idyllic-worldly happiness into transcendental sublimity (Hoffmann, *l.c.*). In the psalm, the wife is compared with a fruitful vine, the monk Notker believes the wife here is a symbol of the Church of Christ, and the Church is as a fruitful vineyard. The olive plant, which in the psalm has an actual interpretation, serves, for Notker, as a symbol of love of peace. As a living, true reality the symbol permeated actual life. White and red roses are practically synonymous with virgins and martyrs. Various interpretations and climaxes are present in one and the same symbol. Thus the walnut is Christ, its inner kernel his divine being, the kernel's skin his human frailty, and its shell the Cross.[18] The hieratic structure of the medieval world is reflected in the hierarchy of symbols.

Pain, Joy and Repression.—The symbol helped in the realization of the meaning of life. The aim, as indicated above, was to overcome the profane, the flesh, which had to be mortified. Medieval man believed that the profane world was sick unto death from original sin, and that this grievous illness could be fought only by suffering. In imitation of Christ, emptying the cup of pain led to salvation. This same agony, this same pain gave birth to the martyr of the early Christian era. This suffering was the struggle of man against nature, and the struggle of nature against man (Hoffmann, *l.c.*). This is one of the roots and at the same time a considerable part of the essence of medieval hysteria. The suppressed soma and the repressed libido are projected into the outer world. Evil desires, phantoms of hell, incubi and succubi, frightened the saint. In the highest state of ecstasy Christ, the Bridegroom appeared to the nun, the Virgin Mary to the monk, and thus the phantoms of Hell are driven away. Herein lies a significant root of the visionary and mystic elements which are characteristic of medieval hysteria. The ecstasy of the saint is but temporary. Again and again the suffering is renewed by the undying libido and by the mortified but ever torturing body. This again kindles a more profound love and adoration of Christ; He is the only One who, through suffering, has conquered pain forever. Thus the hysterical agony of the ascetic and the ecstatic was intimately blended with the bliss of transfiguration that has conquered pain. It was the same Francis of Assisi who had to roll his body in snow and thorns to destroy his carnality, who spoke to his brother, the wolf, with transfigured and transfiguring love, preached to the birds, and to whom the stars and flowers were sister and brother. The suppression of evil—evil which was so feared since it could destroy eternal bliss and endanger the eventual union of man with God—and the resulting repression and projection particularly of the sex urge, led to the witch hunts of the late Middle Ages, with all their sadism. These same urges, which when sublimated caused St. Bernard of Clairvaux and Petrus Damiani to further develop and intensify the cult of the Virgin Mary—insignificant in the early Christian era and early Middle Ages—these urges appeared in a declining and darkening world as horrible products of unsuccessful repression and projection in the Malleus Maleficarum. In the early and high Middle Ages, however, suffering was still blended indissolubly with rejoicing in God and with the suffering and transfigured Christ who had conquered all suffering. This is the profoundest interpretation of the behavior referred to as theopathic. This behavior too, as well as asceticism, dates back to early and pre-Christian times (orgiastic-maiming cult of the Magna Mater, etc.) and is clearly expressed in the writings of Dionysius Areopagita:[19] *οὐ μονον μαθων ἀλλα και παθων τα θεια*

[18] Huizinga, *l.c.*

[19] Quoted after Buber, *l.c.*

(he has not only endured the divine, but also has suffered it). However, theopathy attained general recognition, appreciation and significance during the Middle Ages only.

Symbolism and Mysticism.—Mysticism was kindled by the symbol. The story of one's own life and of political development compared as it was again and again with biblical history was so merged with the Bible that eventually the Bible became the symbol of the present and the present the symbol of the Bible. All symbols revolved about the central symbol of symbols, the miracle of the eucharist. To such an extent is the host Christ, that according to St. Bernard, one who partakes of it is as the grave of the Lord. The unicorn tapestries at the Cloisters Museum of New York portray not only a royal hunt of the unicorn but also the Passion and Resurrection of Christ; the enclosed garden (hortus inclusus) is not only an actual garden but also the Virgin Mary.[20]

World-Order.—The civitas terrena, the physical world (within and outside man's heart) was not only ugly, satanic, corrupt and eternally condemned, but it was also chaotic. The desire of medieval man for a pyramidal regime originated also from his wish to construct a bridge from this world to the Kingdom of Heaven. Kosmos to the Greek was not only earth and universe, but also beauty and adornment. Thus the aesthetic extrovert ideal of the Greek is diametrically opposed to the introvert ideal of medieval man. Ordo universi is the basic principle of Thomas Aquinas' philosophy. The same hieratic, organizing idea appears in the feudal system, the orders of knighthood, the guilds, the hieratical organization of the Church, the symbolic comparison of pope to sun, and emperor to moon. It was the goal of this system to be all-embracing, to be all of life, heaven (hieratic structure of the divine world with God, Christ at his right, the Virgin Mary, the angels and saints), the earth and science too. Thus the system pressed all special sciences into the service of philosophy,[21] and the famous specialists, as for instance the famed botanist and zoologist, Albertus Magnus, never denied the universal striving. All sciences were subordinate to the all-embracing scholastic theology (de Wulf, *l.c.*).

Medieval Man

Tension, Polarity and Repression.—His environment and his concept of the world emotionalized medieval man. Wherever his glance fell, he beheld crucifixes, weeping Mothers of God and martyred saints. They all had suffered, he so much the more since he knew that only through suffering could be redeem himself. Life was full of tears. The basically cold patristic theology of the early years of the Church had to be emotionalized in the Middle Ages. Hugo of St. Victor, St. Bernard, Petrus Damiani, St. Francis, Hildegardis of Bingen transformed the Christ of the catacombs, symbolized by the quiet lamb, into the Christ of the bleeding heart, adored with just such a bleeding heart, with an overwhelming, burning love, the result of repression and sublimation. The immense emotionalization reveals itself also in poetry, in the Dies Irae, the Stabat Mater, and the great threat of the Media Vita.

The conventions of the period contributed to the emotionalization. Emotions were displayed openly. The wealthy displayed extravagant clothing, each rank wore the habit of his rank, the poor exhibited their nakedness and misery, and the leper his sores. Every phase of life was underscored by mystical sacraments. A mass for the dead was read upon the expulsion of a leper from the community of the healthy. The preachers moved their audiences to tears, and arrogance was displayed in pretentious clothing, precious stones and costly arms. The colorful pageantry of life was permeated on every side by the darkness of death. Tension and contrast were unbelievably strong. The dance macabre was the most popular artistic theme of the late Middle Ages. The memento mori was ever present even in the earlier centuries.

[20] James J. Rorimer. The Cloisters. New York, 1939.

[21] De Wulf, Philosophy and Civilization of the Middle Ages. Princeton University Press, Princeton 1923.

Bernard of Morlay, monk at Cluny, wrote in 1140 A.D. (quoted after Huizinga, *l.c.*):

"Nunc ubi Marius atque Fabricius inscius auri
Mors ubi nobilis et memorabilis actio Pauli
Diva Philippica vox ubi caelica nunc Ciceronis." [22]

A hundred years later Jacopone of Todi (quoted after Huizinga, *l.c.*) composed:

"Dic ubi Salomon olim tam nobilis
Vel Sampson ubi est dux invincibilis
Et pulcher Absalom vultu mirabilis
aut dulcis Jonathas multum amabilis
Quo Caesar abiit celsus imperio . . . .
Dic ubi Tullius clarus eloquio
Vel Aristoteles summus ingenio." [23]

The irony and sweet melancholy of Villon's "Mais où sont les neiges d'antan" are not yet present, the somber skeletons of the dead are not yet veiled by the gentle snowflakes. Here death is but decay, corruption and terror of the Last Judgment. Not only the conviction of the wickedness of the body, but also the ever present power of death lead to disdain of the flesh and sexual love. We quote Odo of Cluny: [24]

The beauty of the body is only skin deep. If man could but see beneath the skin . . . . the sight of woman would be but a disgust. That grace is but slime and blood, moisture and gall. Consider that which is buried in the nostrils, the throat and the belly, there is refuse always, and we who cannot even bear to touch slime or dirt with a fingertip, how can we then desire to embrace the refuse bag itself.

And none other than Pope Innocent III says in his book "De contemptu mundi" (quoted after Huizinga, *l.c.*):

Woman conceives with impurity and stench, gives birth in sadness and in pain, and suckles with unease and strain.

Again and again the anguish of the hour of death is portrayed, cemeteries and morgues have a morbid attraction for medieval man. The most frequented Parisian cemetery, and the colonnades of its morgue, were a popular rendezvous.[25] The connection between sexuality and fear is clearly shown. Next to fear, the longing for sanctification permeated every phase of life. Henry Suso, whom we have quoted before, ate apples only if they were quartered. Three parts he ate for the trinity, the fourth in remembrance of Mary's devotion to the Christ Child. At Christmas time however he did not eat the fourth quarter, since at this time the Christ Child was still too small to eat apples. Because of the five wounds of Christ, he drank always in five draughts. Thus the eternal came to the worldly, thus an enormous tension resulted, the tension between heaven and earth. Even crime was permeated by the divine and religion. Gilles de Ray, the sadist, offered a mass in honor of the innocent children while continuing his crimes (Huizinga, *l.c.*). The doctrine of the transsubstantiation served to stimulate blood phantasies even in the minds of the good and the pious whose conscious minds were free of sadistic impulses. "The wounds of Jesus are the blood red flowers of our Paradise," says Bonaventura, doctor seraphicus of the Church, a pupil of St. Francis (Huizinga, *l.c.*). Non-sadistic sexual urges are expressed almost frankly by some mystics. Thus Alain de la Roche, in his mystical experiences, drinks of Mary's milk, and meditates upon each and every part of her body. Everywhere in medieval life there is great polarity, which results in great tension. Heaven and hell, life and death, evil and good, salvation and damnation are more colorfully, more uncompromisingly, more hostilely opposed than in modern life where release and compensation are always sought. Surrounded by sin, born in sin, drawn to eternal bliss and striving for it, desiring asceticism and menaced by temptation—that is medieval man. His metaphysical constructions and his spiritual passions resulted in tension and introversion. The schizothymic, introverted personalities made their impression on the era. The rigorous fanatic, not the practical realist, ruled the world. Bernard of Clairvaux, Gregor IX and Innocent III

[22] Where are now Marius and the incorruptible Fabricius
Where the noble death and the memorable deed of Paulus
And where is now the divine Philippic voice of Cicero.

[23] Say, where is now Solomon once so noble
And where is Samson the invincible leader
And Absalom the beautiful
Or Jonathan the beloved
Where went Caesar the great
And Tullius the eloquent
Or Aristotle the great genius.

[24] After Huizinga, *l.c.;* and Migne. Patrologia Latina, Vol. 133, 556.

[25] Huizinga, *l.c.*

knew no compromise. Polarity and tension explain scholasticism also. The tension here is fides—ratio, the attempt, successful for that period, to bridge the polarity of faith on the one hand and reason, philosophy and natural science on the other. In the tension between these poles there lay a vast restrained energy which, just as the energy of the atom, could be released only by destruction. As long as the medieval mode of life wanted to survive this tension had to be controlled and kept in check. Ordo universalis and hieratic structure of life and church, as the cathedrals and the deductions in the summae of the scholasticists help to control this tension. As soon as this tension and polarity relax, the attitude toward death changes. St. Sebastian, in the Middle Ages an aged man, a warrior with a grey beard, a true martyr [26] turns into a beautiful youth on whose body the arrows hang as ornaments. When tension and polarity relaxed, the Middle Ages came to their end, ordo and hierarchy collapsed, the release of tension led to an overwhelming explosion of life (Renaissance), to the splitting up of universal scholasticism into the special disciplines, to the development of natural science, to invention and discovery.

During the Middle Ages, however, the tension had to be kept in check. It was restrained, until shortly before the end of the era, by those expressions of hysteria which we have studied and described above; later, by the dance epidemics, the witch hunt and the Inquisition. The numerical increase of hysteria and psychogenic disturbances in these later times does not conceal the decrease of their cultural significance. This late phase has been thoroughly studied elsewhere,[27] it is outside the scope of this discussion. The type of hysteria which we described as characteristic for the Middle Ages is occasionally still found in personalities of later epochs, as in Loyola and Fox, the Quaker. But despite the great influence which these men exercised, their significance for their epochs does not reach by far that of the great hysterics of the Middle Ages for their civilization. And within the personality frame itself of these late hysterics, hysteria is of secondary significance only.

[26] Detlev v. Kadeln. Die wichtigsten Darstellungsformen des Heiligen Sebastian. Inauguraldisseration, Strassburg, 1906.

[27] Gregory Zilboorg. The Medieval Man and the Witch during the Renaissance. Baltimore, 1935.

Conclusion

Authors have gone to great lengths to protect the saints from the accusation of hysteria. The complete identification of modern with medieval hysteria, the stigma attached to modern hysteria and other psychogenic disturbances, caused this vigorous defense. The study of medieval personality, environment and hysteria reveals this hysteria and related psychogenic disturbances as a means to achieve ecstatic maturity and great visionary religious experiences. At the same time hysteria was not only a means to an end, a tool, but also the result of the enormous tension, polarity and repression. If we disregard its late off-shoot of witch hunt, dance epidemics and inquisition, this hysteria was productive and of cultural significance in contrast to modern hysteria. It was different and it affected other personalities, personalities who nowadays hardly would have a tendency toward hysteria and psychogenic disturbances. It affected those personalities who needed a stimulus and a tool in order to embody and express completely the essence of their era. We have given numerous examples of hysteria in great medieval personalities. They were great ones, but not the very great ones, not those of the very first order. The men of the second order needed the stimulus and tool of the hysterical mechanism. Not so the genius. Thus Beda Venerabilis, Hrabanus Maurus, Scotus Eriguena, Gerbert, Abelard, Thomas Aquinas and Albertus Magnus have few, or unimportant traces of hysteria. Others, those of second quality, needed the hysterical experience. The profoundness of mystical and ecstatic experience is not minimized or explained if we say that hysterical mechanisms were set in motion to make the experience possible. Between the poles of an overpowering tension stood medieval man. This tension and his desire to reach the eternal and transcendental created his hysteria which, at the same time, helped him to fulfill his yearning. Thus his suffering bore fruit: Passiflora.

STUDIES CONCERNING THE ACTION OF DILANTIN[1]

FELIX FRISCH, M.D., AND ALBERT W. PIGOTT, M.D.
The New Jersey State Village for Epileptics at Skillman

I

The Effect of Dilantin Upon Body-Weight and Serum-Proteins

The fact that dilantin causes no sedative effect upon epileptic patients, but does sometimes bring on some remarkable symptoms, suggests an investigation to determine whether the favorable effect of dilantin depends on an influence upon metabolism. Everyone who has had experience in investigating metabolism in epileptics knows that there are some difficulties which have to be overcome. These difficulties are based on the strange character of metabolic disturbances which epileptics show. These disturbances do not consist in the appearance of a pathological substance nor in a pathological amount of any substance, but in an excessive *lability* of the values of some chemical substances examined. Single determinants of chemical substances are useless in epileptics. If we determine, for example, the NPN-content of a healthy non-epileptic person in a series of about six examinations within two to three months, we shall get a normal average value and a scatter of at most ±5 mg. per cent. When the same procedure is used with epileptics, we find also a normal average figure but a scatter of 25-30 mg. per cent, as the Table I shows:

TABLE I

Date	NPN mg. %	Clinical signs
10/25	27	
10/27	39	Depressed
10/29	44.5	10/30—3 spells
11/3	21	In good health
5/26	24	Normal
5/28	55	Depressed
5/31	62	6/2—1 spell

A twenty-four-year-old girl suffering from periodic epileptic attacks. Some days before spells, psychical changes appeared.

[1] Read at the ninety-seventh annual meeting of The American Psychiatric Association, Richmond, Virginia, May 5-9, 1941.

The high values of NPN-content shown in the table were mostly associated with convulsions although this was not invariable.

In order to avoid misconceptions and to note the characteristic changes, there are two methods for investigating. One consists in a series of examinations in each case, as mentioned above, a very effective method if we are to investigate the changes of a single element; but this method is slow, tedious and not very applicable to problems like ours. The other method is based on the comparison of groups of patients studied under different conditions and reacting in different ways. Since the variations produced by the epileptic lability will not be found simultaneously moving in the same direction in all patients, we shall get a very instructive picture of the average and at the same time the characteristic changes of the individual involved.

Therefore, we applied this "comparison-method" in our investigations, dividing our material in four groups:

Group I. Epileptics not systematically treated by any method.

Group II. Epileptics very successfully treated by dilantin.

Group III. Epileptics treated by dilantin with limited improvement.

Group IV. Epileptics treated by dilantin without any change at all.

THE BODY-WEIGHT

In Table II the body-weight of group II (patients successfully treated by dilantin) note that the average weight of three months before treatment is compared with the weight found at the time of the chemical examination.

We must emphasize the fact that all patients listed in this table are adults. This emphasis is made since children and adolescents present a different picture. In Table II we note that an average loss of twenty pounds accompanies a 92 per cent decrease of the number of attacks. We do not be-

lieve that so large a diminution of body-weight can be explained by loss of water alone, although it certainly plays a rôle. Moreover, the twenty-four hour quantities of urine were entirely normal and the specific gravity was always found within normal limits. We assume that the loss of body-weight is in connection with changes demonstrated below. Unfortunately, our patients generally are not co-operative enough to be subjected to an examination of basal metabolism.

The weight-decreasing effect of dilantin correlates highly with therapeutic success be-

TABLE II

CHANGE OF BODY WEIGHT IN PATIENTS OF GROUP II

Cons. No.	Name	Body weight in pounds		Attacks monthly	
		Before	After	Before	After
1470	G. J.	162	131	4	0
1772	M. Th.	156	133	4	1
2238	H. R.	162	149	5	1.2
2398	D. R.	162	135	5	0
2504	V. F.	265	209	13	0
3032	H. D.	230	198	9	1.4
3059	B. J.	176	139	19	3
3257	E. F.	154	144	14	6
3377	B. A.	144	139	32	2
3497	W. Ch.	159	142	7	0
3620	G. I.	148	134	9	0.5
3841	R. E.	163	157	13	2
4038	J. J.	217	196	9	3
4146	M. B.	181	164	38	0
4814	K. G.	128	126	18	1
Average		174	153	13	1.4

cause it entirely fails to appear in group IV, while in group III, there is an average decrease of only four pounds, as Table III shows. It is, therefore, important for clinicians to realize that the decline of the body-weight is not an incidental but an essential factor.

THE SERUM-PROTEINS [2]

We selected for examination the serum-proteins as a metabolic factor because we know from experience that in epileptics this factor is a very sensitive and expressive indicator of any change of the original balance. We utilized only the cases in which the figures showed an exact conformity to chemical controls. We determined not only the values of albumin and globulin but also directly the total-proteins of the serum. If the latter differed from the sum of albumin and globulin in more than ±5 per cent, the determination was rejected.

[2] Determined according to David M. Greenberg's method—Journal of Biological Chemistry, 1929, Vol. 82, page 545.

TABLE III

BODY WEIGHT OF GROUPS III AND IV

GROUP III

Cons. No.	Name	Body weight in pounds		Attacks monthly	
		Before	After	Before	After
2173	L. J.	110	107	20	12
2824	K. J.	115	114	13	4
2868	A. J.	140	130	15	6
2878	V. H.	123	124	16	5
3962	T. J.	151	145	6	3
4644	H. Ch.	138	131	5	3
Average		129	125	12.5	5.5

GROUP IV

Cons. No.	Name	Body weight in pounds		Attacks monthly	
		Before	After	Before	After
3414	M. H.	142	135	7	7
3929	A. V.	117	122	11	10
3999	St. L.	115	115	13	14
4419	P. H.	153	153	7	5
4806	E. H.	125	123	9	6
4858	F. C.	160	157	8	8
4933	A. H.	127	132	30	15
Average		134	133.8	12	9.3

First of all, we list our findings in the following tables, IV to VII, according to the four groups mentioned above. We used the patients in group I (Table IV) for comparison because not being influenced by any systematic treatment, they were expected to present the figures generally found in epileptics.

TABLE IV

GROUP I. PATIENTS NOT SYSTEMATICALLY TREATED

Cons. No.	Name	Attacks monthly	Serum-proteins in gm. %		
			Total	Albumin	Globulin
2900	McC. J..	30	6.40	3.90	2.50
2916	J. L.	5	6.63	4.68	1.95
3112	L. E.	13	5.94	4.10	1.84
4285	W. P.	7	6.05	3.81	2.24
4295	W. S.	13	6.35	4.28	2.07
4359	M. E.	7	6.73	4.31	2.42
4427	W. R.	..	6.91	3.73	3.18
4486	H. C.	18	6.40	4.34	2.06
5027	C. M.	8	6.17	4.13	2.04
Average		12.6	6.40	4.14	2.26

TABLE V

GROUP II. SUCCESSFULLY TREATED DILANTIN PATIENTS

Cons. No.	Name	Attacks monthly		Serum-proteins in gm. %		
		Before	After	Total	Albumin	Globulin
1470	G. J.	4	0	4.95	3.37	1.58
1772	M. Th.	4	1	5.52	3.84	1.68
2238	H. R.	5	1.2	5.13	3.32	1.81
2398	D. R.	5	0	5.04	3.45	1.59
2504	V. F.	13	0	5.76	3.62	2.14
3032	H. D.	9	1.4	5.56	3.81	1.75
3059	B. J.	19	3	5.33	4.01	1.32
3257	E. F.	14	6	4.98	3.14	1.84
3377	B. A.	32	2	5.36	3.41	1.95
3497	W. Ch.	7	0	4.85 4.88	3.71 3.50	1.14 1.38
3620	G. I.	9	0.5	5.08	3.61	1.47
3841	R. E.	13	2	5.45	3.79	1.66
4038	J. J.	9	3	4.92	3.01	1.91
4146	M. B.	38	0	5.27	3.43	1.84
4814	K. G.	18	1	5.14	3.56	1.58
4486	H. C.	18	1	5.46	3.85	1.61
Average		13	1.4	5.19	3.53	1.66

TABLE VI

GROUP III. INCOMPLETE IMPROVEMENT

Cons. No.	Name	Attacks monthly		Serum-proteins in gm. %		
		Before	After	Total	Albumin	Globulin
2173	L. J.	20	12	5.74	3.90	1.84
2824	K. J.	13	4	5.96	3.86	2.10
2868	A. J.	15	6	5.96	4.11	1.85
2878	V. H.	16	5	5.65	3.54	2.11
3962	T. J.	6	3	5.84	3.73	2.11
4644	H. Ch.	5	3	4.85	3.37	1.48
Average		12.5	5.5	5.66	3.75	1.91

TABLE VII

GROUP IV. REFRACTORY PATIENTS

Cons. No.	Name	Attacks monthly		Serum-proteins in gm. %		
		Before	After	Total	Albumin	Globulin
3414	M. H.	7	7	6.01	3.93	2.08
3929	A. V.	11	10	6.15	3.88	2.27
3999	St. L.	13	14	6.00	4.05	1.95
4419	P. H.	7	5	6.17	4.25	1.92
4806	H. E.	9	6	6.12	4.31	1.81
4858	F. C.	8	8	6.46	4.13	2.33
4933	A. H.	30	15	6.21	3.92	2.29
Average		12	9.3	6.16	4.07	2.09

We put the average values of Tables IV-VII in a separate table (Table VIII) for comparative purposes and added the changes expressed in percentages and in form of the $\frac{\text{albumin}}{\text{globulin}}$ ratio and added the figures of the erythrocytes sedimentation rate (ESR).

SUMMARY

1. Dilantin treatment is accompanied by a decrease of serum-proteins.

2. The decrease corresponds quantitatively to the therapeutic effect.

3. There is a diminution of total protein in the blood serum. It is not equal in all

fractions of the proteins, since it is the globulins which are more consistently decreased. In consequence of this the albumin-globulin ratio in group II, III and IV is increased in spite of the general diminution; and the ESR shows a slackening, an unusual phenomenon, because it is usually an increase which corresponds to a decreased protein value.

As mentioned above, the influence of dilantin in children and adolescents differs from the findings in adults. In these, there is never a loss of body-weight in cases successfully treated by dilantin. On the contrary there is some gain in weight. Since these facts can be explained only by vague hypothesis, we refer the question to further investigation.

TABLE VIII

	Serum-proteins in gm. %							
	Total	Change per cent	Albumin	Change per cent	Globulin	Change per cent	Percentage and ratio *	ESR † in mm.
Group I	6.40	...	4.14	...	2.26	...	65 : 35 R* = 1.8	3.6
Group II	5.19	—19.5	3.53	—14.7	1.66	—28.3	68 : 33 R = 2.1	2.4
Group III	5.66	—11.6	3.75	— 9.4	1.91	—15.5	66 : 34 R = 2.0	1.0
Group IV	6.16	— 3.6	4.07	— 1.6	2.09	— 7.0	66 : 34 R = 2.0	1.3

* $R = \frac{\text{Albumin}}{\text{Globulin}}$ ratio.

† ESR = Sedimentation rate of red corpuscles according to Poindecker's Method: 0.5 cc. of 5% sodium citrate solution plus 2 cc. blood mixed in small special tubes whose diameter is 7 mm. The sedimentation distance is measured after 45 minutes. Normal range in men till 5 mm., in women till 10 mm.

TABLE IX

PATIENT TREATED BY DILANTIN—3 TIMES DAILY, 1½ GRAINS

	Attacks monthly	Serum-proteins in gm. %			Ratio	ESR in mm.
		Total	Albumin	Globulin		
Before treatment	18	6.40	4.34	2.06	68 : 32 2.1	8
After seven weeks' treatment by dilantin..	1	5.46	3.85	1.61	70 : 30 2.4	7

Sometimes these changes may develop in a relatively short time. We present in Table IX the case of a female, age 20, whom we examined before treatment and again seven weeks after the successful use of dilantin, grains 1½, administered three times daily. Here we meet a reduction of the total-proteins by one gramme per cent, that is, about 18 per cent of the original value after seven weeks. It is important to point out that the actual diminution of the proteins in all columns seems to indicate a substantial loss.

That is why we believe that the decrease of body-weight is caused partly by a loss of water because of the reduced osmotic power of the diminished serum-proteins and partly by a real loss of tissue.

II

THE EFFECT OF DILANTIN ON THE CREATININE OUTPUT

Some years ago one of us observed that the creatinine output in the urine of epileptic patients does not fall within the accepted normal limits. It was not possible at that time to investigate this observation fully. We have recently renewed the investigation in an attempt to learn something about the metabolism of muscle in epileptics since it is considered to control the creatinine output. We also wished to determine whether or not the creatinine output is influenced by the administration of dilantin. We used the same group of patients re-

ported on in our studies of the effect of dilantin on protein metabolism. Twenty-four hour specimens of urine were carefully collected and the creatinine output determined according to Folins method.

We repeat that the cases studied were divided into four groups:

Group I. Epileptics not systematically treated by any method.

Group II. Epileptics very successfully treated by dilantin.

Group III. Epileptics treated by dilantin with limited improvement.

Group IV. Epileptics treated by dilantin without any change at all.

The results of our examinations on the patients in group I confirm our previous observations.

TABLE I

Cons. No.	Name	Attacks monthly	Creatinine output: Daily in gm.	Creatinine output: Coefficient *
2900	McC. J.	30	1.69	30.8
2916	J. L.	5	2.35	40.1
3112	L. E.	13	2.37	41.8
4285	N. P.	7	1.53	27.2
4295	W. S. (woman)	13	1.69	32.8
4359	M. E.	7	1.30	19.2
4427	W. R.	30	?	?
4486	H. C. (woman)	18	1.75	36.5
5027	C. M. (woman)	8	1.85	27.0
	Average		1.82	32

Normal values	From	To	Average in gm.	Coefficient
Men	0.677	1.93	1.17	20 to 26
Women	0.455	1.060	0.72	15 to 22
Children	0.107	0.825	0.332	12 to 20

* Coefficient means output in mg. per kg. body weight.

It is noted that the average twenty-four hour urinary creatinine output in this group is considerably higher than the usually accepted normal average. This is especially true when we consider three of this group are women.

It might be assumed that the high creatinine output is caused by the stimulated metabolism of muscles overstrained in convulsions. However, on referring to Table II, it can be seen that this is not a correct assumption. Here we have a group of patients relieved of convulsions by phenobarbital and their average daily output of creatinine is practically the same as in group I.

Comparison of these results indicates there is no relationship between convulsions and creatinine output. Also it would indicate what has been assumed for a long time that the level of creatinine in the urine is not an indicator of the *dynamic* function but of the *tonus* of muscle. The creatinine metabolism of epileptic persons corresponds to that of athletes whose creatinine level remains high even if they rest in bed for sometime.

TABLE II

CREATININE OUTPUT OF PATIENTS FREED FROM ATTACKS BY PHENOBARBITAL TREATMENT

Cons. No.	Name	Attacks monthly: Before	Attacks monthly: After	Creatinine: Daily in gm.	Creatinine: In mgm. per kg.
2094	C. J.	6	0	2.55	43.9
2407	G. P.	4	0	1.75	34.6
2456	S. W.	3	0	0.70	13.2
4363	F. J.	6	0	3.41	47.1
4763	R. C.	5	0	1.93	34.6
4893	C. F.	6	0	0.90	15.0
	Average	5	0	1.87	31.4

TABLE III

CREATININE OUTPUT OF GROUP II

Cons. No.	Name	Attacks monthly: Before	Attacks monthly: After	Creatinine: Gm. daily	Creatinine: Mgm. per kg.
1470	G. J.	4	0	0.637 0.515	10.7 8.86
1772	M. Th.	4	1	0.84	13.9
2398	D. R.	5	0	1.06	16.9
2504	V. F.	13	0	2.06	21.5
3032	H. D.	9	1.4	0.99	11.0
3059	B. J.	19	3	0.78	13.0
3377	B. A.	32	2	0.97	15.6
3497	W. Ch.	7	0	1.14 1.25	17.65 19.40
3620	G. I.	9	0.5	0.89	15.1
3841	R. E.	13	2	0.81	11.4
4038	J. J.	9	3	0.60	7.10
4146	M. B.	38	0	1.29	17.40
4814	K. G.	18	1	1.06	18.20
4486	H. C.	18	1	0.903	17.30
	Average	13	1.4	0.987	14.75

Table III shows the creatinine output of those patients who responded satisfactorily to dilantin. Here we see a marked reduction in the output.

Groups III and IV do not show such a large diminution in the output.

Comparing the output of patients in group II with that of group I, we note a decrease as large as 45.8 per cent in the successfully treated group, while groups III and IV show decreases of 13.2 per cent and 12.6 per cent respectively.

Finally we add the instructive table of our patient H.C. whose creatinine output we determined before successful treatment and after seven weeks of dilantin therapy, one capsule three times daily. The decrease amounts to about 50 per cent of the original value.

Comments

Our studies show a diminution of the creatinine output only in cases successfully treated by dilantin, while the cases not responding to dilantin and those treated by other means, do not show any change worth mentioning. We believe dilantin has no direct influence on muscle metabolism but an indirect influence by way of the ganglion cells, the metabolism of which is markedly changed by the drug. Based on our studies of the influence of dilantin on the serum proteins, we believe the irritability of the ganglion cell is diminished by the altered protein metabolism. The consequence of this is, on the one hand, the reduced susceptibility to convulsive seizures and, on the other hand, the diminished impulses to the muscle fibres controlling muscle tonus.

TABLE IV

Creatinine Output of Group III and IV

GROUP III						GROUP IV					
		Attacks monthly		Creatinine output				Attacks monthly		Creatinine output	
Cons. No.	Name	Before	After	Gm. daily	Per kg. in mg.	Cons. No.	Name	Before	After	Gm. daily	Per kg. in mg.
2173	L. J.	20	12	2.35	51.2	3414	M. H.	7	7	1.47	24.5
2824	K. J.	13	4	1.80	35.7	3929	A.V.	11	10	0.92	16.5
2868	A. J.	15	6	?	?	3999	St. L.	13	14	2.57	49.0
2878	V. H.	16	5	0.66	11.9	4419	P. H.	7	5	1.32	19.8
3962	T. J.	6	3	1.11	17.3	4806	E. H.	9	6	1.12	21.0
4644	H. Ch.	5	3	2.0	34.0	4858	F. C.	8	8	2.00	28.0
						4933	A. H.	30	15	1.72	34.1
Average		12.5	5.5	1.58	30.0	Average		12	9.3	1.59	27.5

TABLE V

	Attacks monthly		Creatinine output		Difference in per cent
	Before	After	Daily gm.	Per kg.	
Group I	16.5	..	1.82	32 mgm.	..
Group II	13	1.4	0.987	14.75 mgm.	—45.8
Group III	12.5	5.5	1.58	30.0 mgm.	—13.2
Group IV	12	9.3	1.59	27.5 mgm.	—12.6

Normal average

Men 1.172
Women 0.724
Children 0.332
Average coefficient: About 25 mg. per kg. or 9 mg. N.

TABLE VI

Name—H. C.	Attacks Monthly		Creatinine output	
	Before	After	In gm. daily	Per kg. in mgm.
Before treatment	18	..	1.75	36.5
After seven weeks of dilantin treatment (dilantin capsule 1, three times daily)..	..	1	0.90	17.3

THE POSITIVE CONDITIONAL SALIVARY REFLEX IN PSYCHONEUROTIC PATIENTS[1]

JACOB E. FINESINGER, M.D., GEORGE F. SUTHERLAND, M.D.
AND FRANCES F. McGUIRE, A.B.
Boston, Mass.

INTRODUCTION

The development of the positive salivary conditional reflex in man has been described by Krasnogorski(1), Lentz(2), and by Finesinger and Sutherland(3). Other investigators(4) have been unable to develop this reflex in man. These diverse findings may be explained on the basis of the instability of the conditional reflex. Hence it appeared to us of prime importance to study the stability of the reflex and the conditions affecting the stability. Several factors can interfere with the easy recognition of the reflex and the evaluation of its magnitude. In the first place, salivation occurs continuously in many individuals even without an administered stimulus (Winsor(5), Strongnin and Hinsie(6)). Krasnogorski(1) designates individuals with a high secretory rate between stimuli as belonging to a subcortical type. It is to be noted that he does not evaluate this intermediate secretion in respect to his data on the formation of the positive reflex. In the second place, the increased salivation evoked by the nonconditional stimulus persists in many cases for a considerable period of time. Hence the magnitude of the conditional reflex must be measured in terms of a differential between the secretion during the stimulus and a preliminary base line secretion. The present study is concerned with the formulation of criteria for recognizing and measuring the reflex and presents data on the stability of a salivary reflex to an auditory stimulus in 10 psychoneurotic patients.

[1] Read at the ninety-seventh annual meeting of The American Psychiatric Association, Richmond, Virginia, May 5-9, 1941.

From the Department of Diseases of the Nervous System of the Harvard Medical School and the Psychiatric Department of the Massachusetts General Hospital.

This work was aided by a grant from the Josiah Macy, Jr. Foundation.

This paper is No. 2 in a series entitled: Conditional Reflexes in Man.

TECHNIC

A. *Method of Elaborating Reflex.*—In establishing the reflex our procedure was to use very short conditional stimuli (3-10 seconds), reenforced by 2 cc. of lemon juice. This short combination was our basic combination for the establishment and preservation of the reflex and will be referred to as such. In order to demonstrate the presence of the conditional reflex the reenforcement was delayed from 10-20 seconds. This prolonged stimulus is referred to as the demonstration combination. Not more than one or two such delayed combinations were introduced each day. In order to preserve the conditional reflex, the short combination was repeated more frequently than any other combination. It was always the first combination of the day and as a rule it was also the last combination of the day.

In addition particular attention was paid to the following procedures:

1. Overlap by about one second of conditional stimulus M 150 (metronome which beats 150 times per minute) with the subsequent nonconditional reenforcing stimulus (2 cc. of diluted and sweetened lemon juice).

2. Avoidance of regular time intervals between stimuli.

3. Minor variations in the duration of the conditional stimulus in both the basic and demonstration combinations to avoid the formation of a trace reflex.

4. Use of a quiet room for the subject isolated from the observer and from the recording apparatus.

In the course of the present experiments on 10 psychoneurotic patients, each patient was tested on consecutive weekdays and received each day from two to six combined stimuli, after the positive conditional reflex to M 150 had been established (Finesinger and Sutherland(3)). It was the general rule to use the demonstration com-

bination (prolonged action of metronome) as the second or third combination of the day. This combination was selected for study in the present paper in order to study comparable reflexes. The remaining tests of the day consisted in repetitions of the basic and the demonstration combinations. In addition, other stimuli such as a visual stimulus (light) and a negative auditory stimulus were used. The subsequent combinations in each day's run involving M 150 are available for study and analysis, but do not appear in the present paper since they may have come under the influence of irradiation of inhibition resulting from negative stimuli preceding them in the course of the day's test.

B. *Method of Measuring the Reflex.*—Parotid capsules placed over Stenson's duct served to collect the saliva. The flow from each gland was recorded independently as previously described(7). This method gives an independent record for each gland and thus enables the observer to detect at once artefacts in secretion due, for example, to slipping of one of the capsules. It also allows one to compare the reaction of the two glands.

C. *Method of Evaluating the Reflex. Criteria for Conditioning.*—Pavlov(8) and Krasnogorski(1) reported their results on the positive reflex simply in terms of the volume secreted during the administration of the conditional stimulus. This implies that there was no secretion except during stimulation. Our records show that a zero base line is rarely attained between successive combinations, *i.e.*, there is almost invariably some interval secretion. Krasnogorski refers to instances of interval secretion as evidence of predominating subcortical activity, but this does not enter into his evaluation of the magnitude of the positive reflex. One cannot be sure that his data are based on selected cases in which there was no interval secretion. Drops of interval secretion do not appear in the sections of his records included in his publications; as a rule these sections are too short to show more than a second or two of the recorded salivation preceding the stimulus.

In working with adult patients and control subjects Lentz considered the problem of interval secretion, and corrected the volume of salivation that occurred during the positive stimulus by subtracting from it a base line volume which he obtained by measuring the rate of secretion (inevitable secretion) obtained during the first five minutes of the test day before the administration of the stimuli. In so doing he makes the arbitrary assumption that this "inevitable secretion" is a constant factor throughout a given test day.

In this study the average quarter-minute rate calculated from the preliminary minute preceding each positive combination is used as the correction factor to be subtracted from the amount of salivation recorded for the period of conditional stimulation. This preliminary minute was characteristically low because we waited for the return to a low rate after the previous nonconditional response. Some of the values for the secretion during the conditional stimulus on successive days are less than the values for the corresponding preliminary minute and hence the corrected conditioning is recorded as a negative value. Lentz refers to this as evidence of inhibition. For the present we prefer merely to present the values in these instances reserving comment until further study.

Data

The subjects included in the present study were 10 psychoneurotic patients, 4 males and 6 females, who were under treatment in the psychiatric service of the Massachusetts General Hospital. The ages ranged from 19 to 50. A brief summary of the case histories appears in the appendix. The diagnoses included hysteria, anxiety neurosis, compulsion neurosis and reactive depression.

The conditioning experiments were carried out over periods ranging from about one week (patients 9 and 10) to several months (patients 1, 2, 3, 5 and 7). The total number of applications of the conditional auditory stimulus varied from 24 combinations (patient 10) to 269 combinations (patient 3). The data on 4 of the patients (patients 2, 4, 7, and 8) are shown in Tables 1 to 4. The data for the remaining 6 patients are not presented individually but are included in the complete summary of the cases which appears in Table 5.

TABLE 1

VALUES FOR CONDITIONAL SALIVARY REFLEX TO POSITIVE AUDITORY STIMULUS (METRONOME 150) DURING 9 MONTHS

PATIENT 2

Test day	Date	Combination number		Duration of stimulus secs.	Left Parotid			Right Parotid			Bilateral corrected		
		For test day	For entire series		Prelim. min./4 drops	Uncorrected drops	Corrected drops	Prelim. min/4 drops	Uncorrected drops	Corrected drops	Increase drops	No change drops	Decrease drops
	1939												
1	3/13	3	3	15	0.25	1	0.75	....	..	.....	1.50	....	....
2	3/14	4	9	15	0	6	6.00	0.25	13	12.75	18.75	....	....
3	3/15	2	12	15	0.25	0	−0.25	0.75	1	0.25	.....	0	....
5	3/17	5	21	15	0.25	10	9.75	0.25	5	4.75	14.50	....	....
6	3/18	3	24	15	0.25	5	4.75	0.25	13	12.75	17.50	....	....
7	3/20	2	28	15	0.75	1	0.25	0	4	4.00	4.25	....	....
8	3/21	4	34	15	5.00	4	−1.00	0.50	0	−0.50	.....	....	−1.50
11	3/24	3	42	15	1.25	3	1.75	0.75	1	0.25	2.00	....	....
12	3/25	3	46	15	....	..	.....	1.00	5	4.00	8.00	....	....
13	3/27	4	51	15	2.75	8	5.25	....	..	.....	10.50	....	....
14	3/28	2	53	15	0	1	1.00	0.25	2	1.75	2.75	....	....
15	3/29	2	57	15	0.50	9	8.50	0.50	11	10.50	19.00	....	....
16	3/30	2	61	15	0	3	3.00	0	3	3.00	6.00	....	....
18	4/1	3	72	10	0.75	0	−0.75*	3.75	1	−2.25*	.....	....	−3.00
21	4/5	2	79	10	0.75	0	−0.75*	4.25	5	+3.25*	2.50	....	....
22	4/6	2	82	10	0	1	1.50*	0.50	5	7.00*	8.50	....	....
23	4/7	2	85	15	0.25	5	4.75	0.25	10	9.75	14.50	....	....
24	4/8	2	88	10	0.75	0	−0.75*	1.00	3	3.50*	2.75	....	....
25	4/10	2	91	10	2.00	0	−2.00*	1.00	0	−1.00*	.....	....	−3.00
28	4/13	2	103	10	1.00	1	0.50*	1.00	2	2.00*	2.50	....	....
33	4/21	2	115	15	0.50	0	−0.50	0.75	0	−0.75	.....	....	−1.25
34	4/22	2	118	10	0	5	7.50*	0.25	5	7.25*	14.75	....	....
35	4/24	2	121	15	0.50	9	8.50	1.50	3	1.50	10.00	....	....
41	10/30	2	131	15	0.25	0	−0.25	0	0	0	.....	....	−0.25
42	10/31	2	135	15	0.25	1	0.75	0.25	5	4.75	5.50	....	....
43	11/1	2	138	15	0.25	7	6.75	0.25	8	7.75	14.50	....	....
45	11/3	2	146	15	0.25	11	10.75	0.25	13	12.75	23.50	....	....
46	11/4	2	150	15	0.25	6	5.75	0.50	8	7.50	13.25	....	....
47	11/6	2	154	15	0.50	4	3.50	0.25	3	2.75	6.25	....	....
48	11/7	2	158	15	0.50	4	3.50	0.75	4	3.25	6.75	....	....
49	11/8	2	160	15	0.50	5	4.50	0	4	4.00	8.50	....	....
50	11/9	3	166	15	0.50	5	4.50	0.75	12	11.25	15.75	....	....
51	11/10	3	171	20	0.50	15	10.80*	0.75	10	6.75*	17.55	....	....
52	11/13	2	175	15	0.50	6	5.50	0.25	9	8.75	14.25	....	....
53	11/14	2	179	15	0.25	0	−0.25	0.25	0	−0.25	.....	....	−0.50
55	11/22	2	183	15	0.50	1	0.50	0.25	1	0.75	1.25	....	....
56	11/23	2	189	15	0.25	1	0.75	0.75	0	−0.75	.....	0	....
57	11/24	3	195	15	0.50	1	0.50	0	0	0	0.50	....	....
59	11/27	2	203	7	1.25	1	0.75*	1.00	2	3.00*	3.75	....	....
61	12/1	2	211	15	0.50	2	1.50	0.50	5	4.50	6.00	....	....
62	12/5	2	215	15	0.25	0	−0.25	0.50	1	0.50	0.25	....	....

* This value is corrected to adjust the secretion to a 15 second basis.

The data presented in the tables are derived from the demonstration combinations. Rarely two or more basic combinations preceded the combination selected for analysis. On these days the combinations selected represent the third, fourth or even fifth test of the day. In these tables the order of the test days is indicated by consecutive numbers in column 1, and the duration of the conditional stimulus is given in column 5. In the next columns (6-11) are presented the secretion values for the left and right parotid glands. For each gland is shown the directly from the record. The first correction (time correction) had to be made to reduce the value to a 15-second basis. In every case a second correction was made to allow for the error introduced by the base line secretion. This correction is the value given in columns 6 and 9 and represents the quarter-minute average for the number of drops appearing in the record for the minute preceding the application of the conditional stimulus. This correction for the preliminary period is subtracted from the secretion during the stimulus adjusted to a fifteen-

TABLE 2

VALUES FOR CONDITIONAL SALIVARY REFLEX TO POSITIVE AUDITORY STIMULUS (METRONOME 150) DURING 22 DAYS

PATIENT 4

Test day	Date	Combination number		Duration of stimulus secs.	Left Parotid			Right Parotid			Bilateral corrected		
		For test day	For entire series		Prelim. min/4 drops	Uncorrected drops	Corrected drops	Prelim. min/4 drops	Uncorrected drops	Corrected drops	Increase drops	No change drops	Decrease drops
	1939												
1	11/20	4	4	15	1.75	3	1.25	0	5	5.00	6.25	....	....
2	11/21	3	9	15	1.25	4	2.75	0	0	0	2.75	....	....
3	11/22	2	12	15	0.50	1	0.50	0	0	0	0.50	....	....
4	11/23	2	18	15	0.75	1	0.25	0	0	0	0.25	....	....
5	11/24	2	23	15	1.25	2	0.75	0.50	1	0.50	1.25	....	....
6	11/25	2	27	15	0.25	1	0.75	0.75	1	0.25	1.00	....	....
7	11/27	3	32	15	1.50	2	0.50	0.50	0	−0.50	....	0	....
9	12/1	2	39	15	1.25	3	1.75	0	0	0	1.75	....	....
10	12/2	3	45	15	1.00	2	1.00	0.25	0	−0.25	0.75	....	....
11	12/4	2	48	15	2.50	2	−0.50	1.00	1	0	....	....	−0.50
12	12/5	2	52	13	1.00	5	4.00*	0.50	3	2.50*	6.50	....	....
13	12/6	2	57	15	0.50	3	2.50	0.50	2	1.50	4.00	....	....
14	12/7	2	61	15	1.00	0	−1.00	1.00	1	0	....	....	−1.00
15	12/8	2	66	15	0.50	0	−0.50	0.50	0	−0.50	....	....	−1.00
16	12/9	4	74	15	1.75	5	3.25	0.75	2	1.25	4.50	....	....
17	12/11	2	77	15	0.75	2	1.25	0	0	0	1.25	....	....
18	12/12	2	82	15	1.50	0	−1.50	0.25	0	−0.25	....	....	−1.75

* This value is corrected to adjust the secretion to a 15 second basis.

preliminary value, the uncorrected value for the conditional stimulus and the corrected conditional reflex value. In the last three columns (12-14) appear the values for the bilateral conditional reflex tabulated under the headings of "increase," "no change," or "decrease" from the preliminary values. The secretion values are all given in drops of saliva. The calibration of the drops varied from 0.019 to 0.022 cc.

Derivation of Corrected Conditional Reflex.—The uncorrected conditional reflex values (Tables 1-4, columns 7 and 10) represent the number of drops secreted for the duration of the conditional stimulus as read second basis. Whenever the time correction is made the resulting corrected conditional reflex values (columns 8 and 11) are marked with asterisks. It can be seen that some of the corrected reflex values are positive whereas a smaller number are negative and zero. This is due to the fact that in some instances the preliminary value exceeded or equalled the uncorrected conditional value. Dashes indicate that no record was obtained for that gland, often due to the slipping of a capsule. These cases are obviously to be distinguished from the true zero readings discussed above. The bilateral values (columns 12, 13, 14) represent the sum of the

TABLE 3

VALUES FOR CONDITIONAL SALIVARY REFLEX TO POSITIVE AUDITORY STIMULUS (METRONOME 150) DURING 3 MONTHS

PATIENT 7

Test day	Date	Combination number		Duration of stimulus secs.	Left Parotid			Right Parotid			Bilateral corrected		
		For test day	For entire series		Prelim. min/4 drops	Uncorrected drops	Corrected drops	Prelim. min/4 drops	Uncorrected drops	Corrected drops	Increase drops	No change drops	Decrease drops
	1940												
2	1/18	3	8	15	2.00	11	9.00	2.50	7	4.50	13.50	....	....
3	1/19	2	10	15	0.75	3	2.25	0.50	4	3.50	5.75	....	....
4	1/20	2	14	15	0.50	3	2.50	0.50	2	1.50	4.00	....	....
5	1/22	2	18	15	0.25	0	−0.25	0.25	0	−0.25	....	....	−0.50
6	1/23	2	22	15	0.75	2	1.25	1.00	3	2.00	3.25	....	....
7	1/24	2	26	15	2.25	9	6.75	0	4	4.00	10.75	....	....
8	1/25	2	30	15	3.00	6	3.00	1.75	6	4.25	7.25	....	....
10	1/27	2	36	15	1.50	6	4.50	0.50	6	5.50	10.00	....	....
11	1/29	2	39	15	1.00	5	4.00	0.25	1	0.75	4.75	....	....
12	1/30	2	42	15	0.75	1	0.25	0.50	0	−0.50	....	....	−0.25
13	1/31	2	45	15	....	..	....	0.75	1	0.25	0.50	....	....
14	2/1	2	49	15	0.75	9	8.25	0.25	4	3.75	12.00	....	....
15	2/2	2	52	15	1.50	0	−1.50	0.75	1	0.25	....	....	−1.25
16	2/3	2	55	15	....	..	....	1.00	0	−1.00	....	....	−2.00
17	2/5	2	58	15	1.25	2	0.75	0.25	0	−0.25	0.50	....	....
18	2/6	2	61	15	0.50	5	4.50	0.75	8	7.25	11.75	....	....
19	2/7	2	64	15	1.25	1	−0.25	0.25	0	−0.25	....	....	−0.50
20	2/8	2	66	15	1.25	4	2.75	....	..	....	5.50	....	....
21	2/9	2	71	15	1.75	6	4.25	2.00	4	2.00	6.25	....	....
22	2/10	2	75	15	2.00	4	2.00	....	..	....	4.00	....	....
23	2/13	3	80	15	2.00	8	6.00	2.00	4	2.00	8.00	....	....
24	2/14	3	82	15	0.75	5	4.25	1.00	2	1.00	5.25	....	....
25	2/16	2	85	15	0	0	0	2.25	7	4.75	4.75	....	....
26	2/17	2	88	15	1.25	1	−0.25	0	0	0	....	....	−0.25
27	2/19	2	91	15	1.00	3	2.00	0	6	6.00	8.00	....	....
28	2/20	2	94	15	0.75	4	3.25	3.25	9	5.75	9.00	....	....
30	2/23	2	97	15	1.75	2	0.25	1.50	2	0.50	0.75	....	....
31	2/24	2	100	15	1.50	2	0.50	0.50	2	1.50	2.00	....	....
32	2/26	2	104	15	0.25	0	−0.25	1.00	2	1.00	0.75	....	....
33	2/27	2	106	15	1.25	2	+0.75	1.50	1	−0.50	0.25	....	....
34	2/28	2	108	15	1.25	2	0.75	1.00	3	2.00	2.75	....	....
35	2/29	2	111	15	1.25	3	1.75	....	..	....	3.50	....	....
36	3/1	2	115	15	0.75	2	1.25	1.25	1	−0.25	1.00	....	....
37	3/2	2	117	15	2.25	2	−0.25	1.25	1	−0.25	....	....	−0.50
38	3/4	2	120	15	2.00	5	3.00	1.25	2	0.75	3.75	....	....
39	3/5	2	123	15	....	..	....	2.75	4	1.25	2.50	....	....
41	3/7	2	129	15	1.25	1	−0.25	2.00	3	1.00	0.75	....	....
44	3/12	2	137	15	1.75	7	5.25	1.00	4	3.00	8.25	....	....
45	3/13	2	140	15	1.50	1	−0.50	....	..	....	....	....	−1.00
46	3/14	2	143	15	2.00	5	3.00	2.00	4	2.00	5.00	....	....
47	3/15	2	146	15	1.75	1	−0.75	1.50	2	0.50	....	....	−0.25
48	3/16	2	148	15	1.50	3	1.50	1.25	2	0.75	2.25	....	....
50	3/22	3	156	15	....	..	....	1.00	0	−1.00	....	....	−2.00
51	3/23	2	160	15	2.50	2	−0.50	1.25	2	0.75	0.25	....	....

corrected secretion of the left and right parotid glands. In cases where only one gland was recording, the value for the bilateral reflex was arbitrarily arrived at by doubling the corrected secretion for the single gland.

In summary Table 5 are presented for the 10 patients the mean values for the bilateral corrected conditional reflex and also the values for the left and right glands considered independently. Variations from these mean values are given in terms of range, standard deviation and coefficient of variation. The right half of the table presents an analysis of the corrected conditional reflex for the left and right gland and for both glands. This analysis for the bilateral response (Fig. 7) is given in terms of per cent frequency and magnitude in drops of the positive reaction (increase in salivation). The frequency of instances showing no change in salivation and the frequency and magnitude of the reactions in which there is a decrease in salivation from the preliminary minute are also reported.

Frequency

For all the subjects the positive bilateral response occurred in a strikingly uniform and large per cent of the tests, the mean frequency of the positive reflex being 77 per cent. In 7 of the patients the frequency of the positive reaction was from 80 to 83 per cent. For 3 patients (patients 1, 4 and 5) the frequency of the positive response was considerably less (66 to 71 per cent), but even in these, the ratio of positive responses to those responses showing no change or a decrease, was more than 2 to 1. (Fig. 7.) If the tests are selected in which both glands are recording and in which the results for the two glands are consistent the frequency of the positive reflex appears essentially the same as is seen when all of the tests are considered as above. In some cases the conditional responses appeared more often on one side than on the other. The mean value of the frequency for the 10 subjects is 74 per cent for the left gland (range 61 to 88 per cent) and 62 per cent for the right gland (range 35 to 100 per cent). Two

TABLE 4

Values for Conditional Salivary Reflex to Positive Auditory Stimulus (Metronome 150) During 18 Days

PATIENT 8

Test day	Date	Combination number		Duration of stimulus secs.	Left Parotid			Right Parotid			Bilateral corrected		
		For test day	For entire series		Prelim. min/4 drops	Uncorrected drops	Corrected drops	Prelim. min/4 drops	Uncorrected drops	Corrected drops	Increase drops	No change* drops	Decrease drops
	1940												
1	3/7	4	4	15	1.75	6	4.25	1.00	3	2.00	6.25	....	....
2	3/8	2	7	15	1.00	3	2.00	0.75	1	0.25	2.25	....	....
3	3/9	2	13	15	0.25	3	2.75	0.50	3	2.50	5.25	....	....
4	3/11	2	19	15	1.50	5	3.50	0.75	2	1.25	4.75	....	....
5	3/12	2	23	15	0.75	1	0.25	1.00	1	0	0.25	....	....
6	3/13	2	29	15	1.25	2	0.75	1.00	2	1.00	1.75	....	....
7	3/14	2	34	15	1.00	1	0	0.75	2	1.25	1.25	....	....
8	3/15	3	40	15	1.50	1	−0.50	2.25	2	−0.25	....	....	−0.75
9	3/16	2	44	15	0.25	2	1.75	1.00	1	0	1.75	....	....
10	3/18	2	49	15	1.00	3	2.00	1.25	3	1.75	3.75	....	....
11	3/19	2	52	15	0.25	0	−0.25	1.25	2	0.75	0.50	....	....
12	3/20	2	56	15	0.50	3	2.50	1.25	3	1.75	4.25	....	....
13	3/21	2	60	15	1.25	3	1.75	0.25	1	0.75	2.50	....	....
14	3/22	2	63	15	0.25	1	0.75	0.50	3	2.50	3.25	....	....
15	3/26	2	70	15	0.50	3	2.50	0.50	1	0.50	3.00	....	....
16	3/27	2	74	15	1.50	2	0.50	0.75	0	−0.75	....	....	−0.25
17	3/28	2	78	15	1.00	0	−1.00	0.75	0	−0.75	....	....	−1.75
18	3/29	2	81	15	1.25	8	6.75	0.50	4	3.50	10.25	....	....

TABLE 5

CONDITIONAL REFLEX TO METRONOME 150 DURING 15 SECONDS MEASURED AS CHANGES IN SALIVATION FROM PRELIMINARY VALUE

Subject No.	Parotid gland	No. of tests	Corrected conditional reflex				Analysis of corrected conditional reflex values				
							Increase		No change frequency per cent	Decrease	
			Range drops	Mean drops	Standard deviation ± drops	Coefficient of variation ± drops	Frequency per cent	Mean drops		Frequency per cent	Mean drops
1	Left	29	+11.5 to −2.0	2.7	3.2	119	66	4.3	17	17	−0.7
	Right	31	+10.0 to −1.0	1.7	2.6	152	49	3.6	32	19	−0.5
	Bilateral*	32	+20.0 to −3.0	4.9	6.0	117	66	7.2	12	22	−1.0
2	Left	40	+10.8 to −2.0	2.9	3.5	122	75	4.2	0	25	−0.7
	Right	39	+12.8 to −3.3	4.2	4.2	100	80	5.4	5	15	−1.0
	Bilateral*	41	23.5 to −4.0	7.0	7.1	101	80	9.1	5	15	−1.6
3	Left	38	+6.5 to −0.5	1.7	1.6	92	88	2.0	7	5	−0.4
	Right	62	+7.3 to −5.5	1.8	1.9	106	84	2.3	10	6	−1.7
	Bilateral*	66	14.5 to −11.0	3.7	3.7	100	83	4.6	11	6	−3.1
4	Left	17	+4.0 to −1.5	1.0	1.5	146	76	1.6	0	24	−0.9
	Right	17	+5.0 to −0.5	0.6	1.3	215	35	1.9	41	24	−0.4
	Bilateral*	17	+6.5 to −1.8	1.6	2.4	153	71	2.6	6	23	−1.1
5	Left	51	+6.5 to −0.8	0.7	1.5	210	61	1.4	4	35	−0.4
	Right	51	+10.8 to −0.8	1.4	2.5	182	53	2.4	16	31	−0.5
	Bilateral*	51	+14.3 to −1.3	2.2	3.3	151	67	3.6	8	25	−0.7
6	Left	10	5.3 to −3.3	1.0	2.0	286	67	2.2	0	33	−1.5
	Right	9	6.0 to 0	2.9	1.8	63	89	3.2	11	0	...
	Bilateral*	10	10.0 to −3.3	4.3	4.2	102	80	5.9	0	20	−2.1
7	Left	40	+9.0 to −1.5	2.2	2.5	112	72	3.1	23	5	−0.4
	Right	41	+7.3 to −1.0	1.7	2.1	125	73	2.3	22	5	−0.5
	Bilateral*	44	13.5 to −2.0	3.7	4.0	109	80	4.9	0	20	−0.8
8	Left	18	+6.8 to −1.0	1.7	1.9	109	83	2.2	6	11	−0.8
	Right	18	+2.3 to −0.8	1.0	1.2	116	72	1.5	11	17	−0.6
	Bilateral*	18	+10.3 to −1.8	2.7	2.8	104	83	3.5	0	17	−1.0
9	Left	4	+3.3 to −0.3	1.8	1.3	74	75	2.5	0	25	−0.3
	Right	6	+3.0 to −0.8	1.4	1.3	89	83	1.8	0	17	−0.8
	Bilateral*	6	+6.0 to −1.0	3.1	2.5	81	83	3.9	0	17	−1.0
10	Left	5	+2.3 to −1.0	1.0	1.2	118	80	1.5	0	20	−1.0
	Right	4	+4.5 to +0.3	2.3	1.6	68	100	2.3	0	0	...
	Bilateral*	5	+5.0 to −2.0	2.6	2.6	100	80	3.8	0	20	−2.0

* The bilateral values were calculated for each test by adding the secretion from the left and right glands. When the value for one gland was lacking, the reading for the other gland was doubled to obtain the bilateral value.

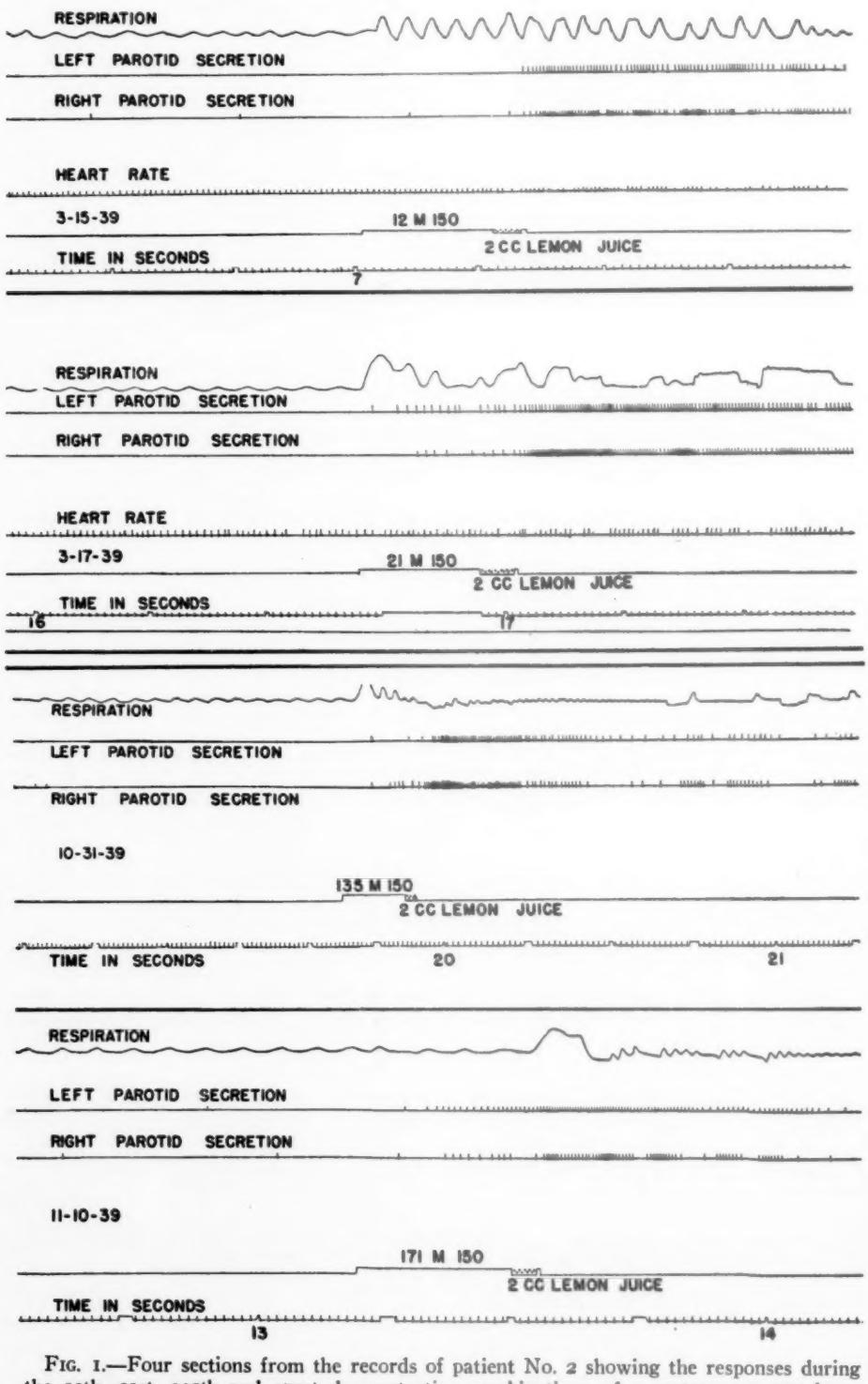


FIG. 1.—Four sections from the records of patient No. 2 showing the responses during the 12th, 21st, 135th and 171st demonstration combinations of a metronome, 150 beats per minute reenforced by lemon juice (record to be read from left to right). With the exception of the first section definite bilateral positive responses appear in each case. Drops of interval secretion before the conditional stimulus occur in each section. The nonconditional secretion to lemon juice can be seen. The respiration changes abruptly during the conditional stimulus in the first three sections.

patients (patients 1 and 4) showed a predominantly left-sided secretion both in the base line secretion and for the conditional reflex. It is of interest to note that none showed a marked right-sidedness in secretion. To rule out the possibility that the increase in salivation during the conditional stimulus is not the result of a spontaneous spurt in the base line secretion, a study was made on the frequency of change in secretion following a minute of low interval secretion, comparable to the preliminary minute. The results found in 70 such instances showed increases occurring in 47 per cent, decreases in 43 per cent and no change in 10 per cent. This indicates that the high percentage of positive reflex values (77 per cent mean value) cannot be attributed to spontaneous changes in the interval secretion. The statistical evaluation of the data presents clear evidence for the presence of a positive conditional reflex.

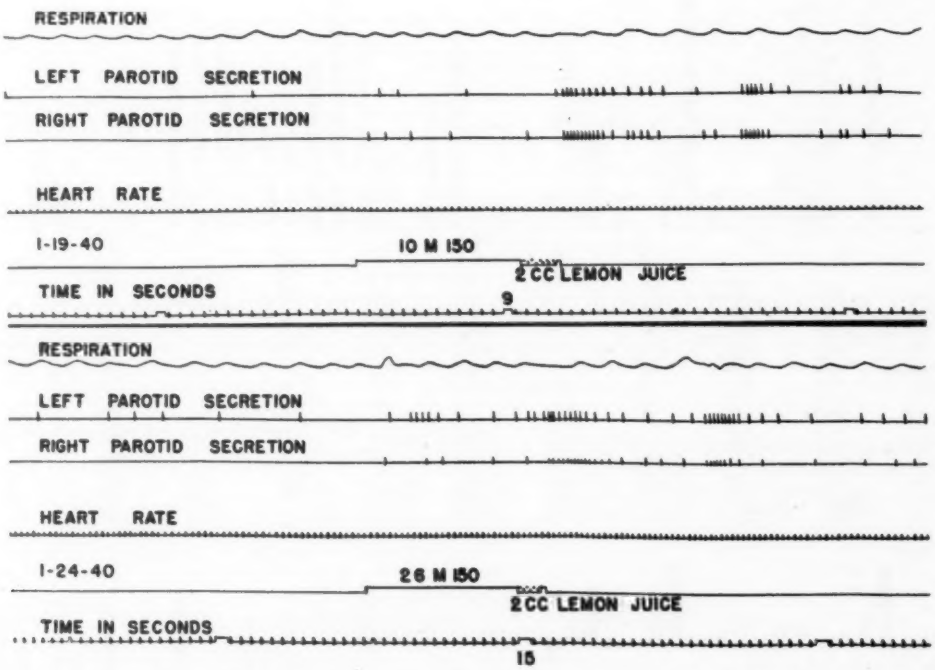


FIG. 2.—Two sections from the records of patient No. 7 showing the 10th and 26th demonstration combinations (record to be read from left to right). Both sections show positive salivary conditional reflexes for both glands. Note the interval secretion for the left parotid gland in lower section.

Magnitude of Reflex.—The mean value for the positive bilateral reflex for the patients was 3.6 drops for all of the tests (range 2.2 to 7.0 drops). For the tests in which a positive reflex only was considered, the mean value was 4.9 drops (range 2.6 to 9.1 drops). No significant relationship exists between the frequency and magnitude of the positive reflex. When a comparison is made between the magnitude of spontaneous spurts following a low minute of interval secretion with the magnitude of the positive reflex, a mean value of 4.1 drops is found for the former and 4.9 for the latter. This discloses the fact that the conditional stimulus does not evoke a significantly greater response than can occur spontaneously in contrast to the significant change with respect to frequency.

There is a wide variation in the magnitude of the reflex from day to day in each patient. The magnitude of the reflex did not become progressively greater as the tests were continued. High values were often

found in the early stages of the experiment. A perusal of Figs. 3-6 illustrates this point. No correlation was found between the coefficient of variation and the magnitude of response. The mean value of the latent period for the 10 patients was 4.9 seconds for the left gland and 5.3 seconds for the right gland. The range was 2.5-6.5 seconds for the left gland and 3.1-8.0 seconds for the right gland.

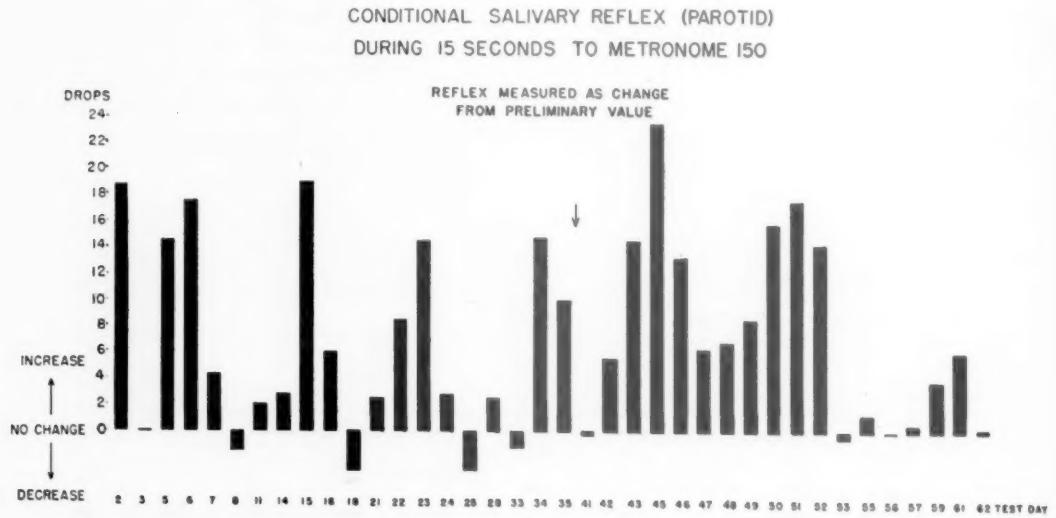


FIG. 3.—Conditional bilateral salivary reflexes of patient No. 2 arranged in order of test days. The arrow indicates a six months' interruption. Note the series of high positive values for the ten consecutive test days after the resumption of the experiments.

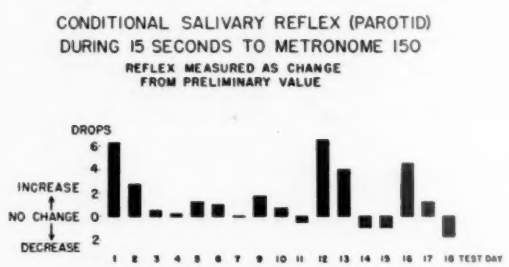


FIG. 4.—Conditional bilateral salivary reflex for patient No. 4. Note the instability of the reflex with a high proportion of low and negative values.

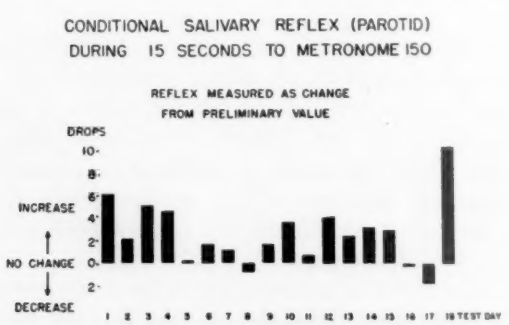


FIG. 5.—Conditional bilateral salivary reflex of patient No. 7 arranged in order of test days. Note the high values for the reflex during the earlier part of the experiment.

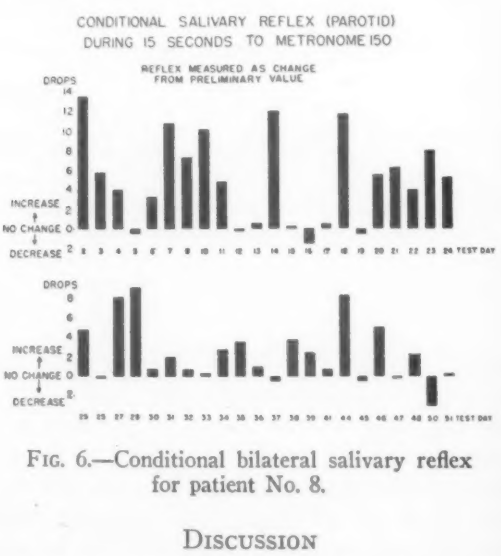


FIG. 6.—Conditional bilateral salivary reflex for patient No. 8.

DISCUSSION

The data presented above indicate that these patients were able to form positive conditional reflexes when presented with a neutral stimulus in combination with a well-established natural or nonconditional reflex. When the technic described above was used,

every patient tested showed the ability to form and elaborate a positive reflex. In most cases the reflex was readily formed and the values found during the early combinations were definite and as a rule high. When comparable tests were studied from day to day, fluctuations in frequency and intensity of the reenforced reflex could be seen. Often these fluctuations arranged themselves in a temporal sequence, *i.e.*, there were several days in succession when the positive response was high. Often this was followed by a few test days when the positive response was low in magnitude. The frequency values indicate that the reflex is stable as to its occurrence once formed. The consideration of the magnitude values indicate considerable variation from day to day.

The evaluation of the reflex as studied in these patients is a complicated matter, due primarily to the fact that they present a variable basal secretion. Pavlov(8) does not mention this phenomenon in the dogs reported in his books of lectures. Whether this interval secretion is found only in man or whether Pavlov and his co-workers selected dogs not showing this phenomenon is not clear. James(9) has reported this phenomenon in dogs and Sutherland(10) has observed interval secretion in the pig.

The presence of secretory activity between stimuli makes it necessary to correct the increase in salivation on the application of the conditional stimulus in terms of a preliminary variable base line. This correction is described above and was used for almost all of the combinations reported. In only a few single experiments was the base line value zero. In these patients the base line secretion between stimuli was high. This may be due to the type of experiment or to an artefact caused by persistence of lemon juice in the mouth. We are not, at present, able to know if the high secretion is related to either the frequency or magnitude of the reflex. The source of error due to variable base line secretion has been mentioned above. Another source of error in evaluating these results might be the fact that drops of secretion are expressed from the gland by movements of the head, tightening of the masseter muscles and by swallowing. Strongnin(6) has attempted to account for the drops of saliva associated with swallowing on the part of the subject in presenting his data on basal secretion. No attempt was made to ascertain the effect of swallowing on the conditional secretion in our patients. The question as to whether swallowing, which occurs with increased fre-

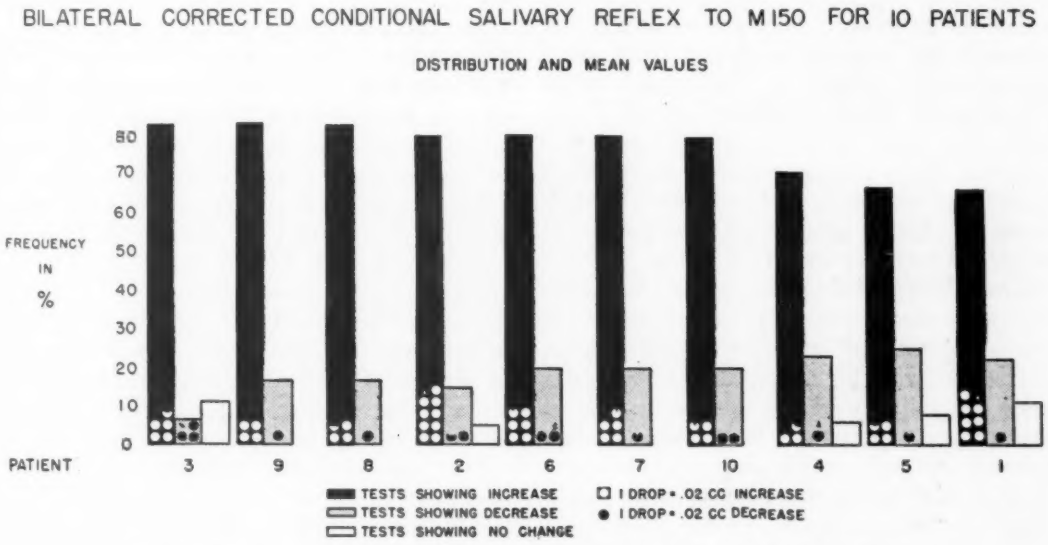


FIG. 7.—Summary of per cent frequency and magnitude of conditional reflex for ten psychoneurotic patients.

quency when the lemon juice is introduced, induces some of the salivation attributed to the conditional and the nonconditional stimuli has not been settled for the present.

An attempt was made in some additional experiments on a different group of patients and control subjects to study the relationship between swallowing and the production of recorded drops of secretion before and after the administration of lemon juice. A record was kept of all the spontaneous swallows of the subject and the time relationship between the swallows and the drops of secretion was studied. In addition, the subjects were commanded to swallow at various times during the experiment. These preliminary experiments indicate that individuals differ considerably in regard to the effect of swallowing on the secretion. Drops and spurts (2 or more drops occurring within 5 seconds) of secretion occurred without swallowing. Drops and spurts of secretion were found before, after and coincidental with swallows. Often spontaneous and command swallows were observed to occur without the production of drops or spurts. Swallowing was more frequently associated with drops and spurts of secretion when the secretion values were high. Repeated tests on the same individual were not consistent. These preliminary experiments show that the relationship between swallowing and the production of drops of secretion is not a single and direct one.

It is also to be noted that the combinations studied in this paper (demonstration combinations) were always preceded by a basic combination (as a rule the first of the day) in which the conditional stimulus acted for 2-3 seconds followed by reenforcement. It may well be that the basic combination may have exerted by way of induction a positive effect upon the combination studied, and this may be a factor in explaining the frequency for the positive reflex reported above.

In the popular and semi-popular literature the word "conditioning" has been used to include a variety of mental processes, such as learning and habit formation. In this study the word is used rigidly and in its empirical sense, namely, to denote the response to a neutral stimulus followed by a nonconditional stimulus. In attempts made to evaluate the rôle of the process of forming and elaborating the conditional reflex in the behavior of the individual, much has been attributed to the conditioning process which may be more precisely associated with other processes. A glance at the variations obtained in the positive reflex values in these patients at once shows the distinct differences between the curve obtained on conditioning and the usual type of learning curve.

The variability in the magnitude of the positive reflex would seem to show that even with constant reenforcement and under optimal conditions for maintaining the reflex there is a certain amount of unpredictability. Other experiments indicate that when the reenforcement is removed the reflex tends to be extinguished. A reflex which has been elaborated will persist only as long as it is reenforced and as long as the combinations are arranged in an almost haphazard temporal fashion. The persistence of a reflex without reenforcement is seen occasionally as reported by Krasnogorski in a pathological case. As a rule, lack of reenforcement leads to extinction. If the conditional reflex results in persistent changes in behavior the reenforcement must always be present. Changes in behavior which persist without reenforcement must be the result of some process other than conditioning.

We have demonstrated that a type of positive conditional reflex can be elaborated in patients which has all the characteristics of the conditional reflex used in the rigid sense as described by Pavlov. The mere demonstration of these phenomena is only the beginning of the investigation. The incidence of these phenomena, the stability of the reflex and the rôle of the reflex in integrated behavior are the elements for study and evaluation.

Summary

1. A positive conditional salivary reflex to an auditory stimulus was developed in 10 psychoneurotic patients. The stimulus was a metronome 150 beats per minute reenforced by lemon juice.

2. The salivary responses were designated as positive when the action of the metronome was accompanied by an increase in salivation over the rate immediately preceding the stimulus.

3. When the results for the first prolonged stimulus of the day were studied for each patient, the positive responses appeared in from 67 to 83 per cent of the cases, the mean value of the positive reflex for the 10 patients being 77 per cent.

4. The mean value of the positive response for 15 seconds was 4.9 drops or 0.1 cc.

BIBLIOGRAPHY

1. Krasnogorski, N. I. Bedingte und unbedingte Reflexe im Kindesalter und ihre Bedeutung für die Klinik, Ergebn. d. inn. Med. u. Kinderh., **36**: 613, 1931.

Conditioned reflexes in psychopathology of childhood. Am. J. Dis. Child., **45**: 355, February 1933.

2. Lentz, A. K. Les Reflexes Conditionnels Salivaires chez l'homme sain et aliéné et leur rapprochement avec les donnes de la conscience. L'Encephale, **11**: 394, 1935.

3. Finesinger, J. E., and Sutherland, G. F. The salivary conditional reflex in man. Trans. Am. Neurol. Ass., p. 50, 1939.

4. Richter, C. P., and Wada, T. Method of measuring salivary secretion in human beings. J. Lab. and Clin. Med., **9**: 271, January 1924.

5. Winsor, A. L. Factors indirectly affecting parotid secretion. J. Exper. Psychol., **13**: 423, 1930.

The effect of mental effort on parotid secretion. Am. J. Psychol., **43**: 434, 1931.

6. Strongnin, E. I., and Hinsie, L. E. Parotid secretory rate in schizophrenic patients. J. Nerv. and Ment. Dis., **87**: 715, 1938.

Parotid gland secretions in manic-depressive patients. Am. J. Psychiat., **94**: 1459, 1938.

7. Finesinger, J. E., and Finesinger, G. L. A modification of the Krasnogorski method for stimulating and measuring the secretion from the parotid gland in human beings. J. Lab. and Clin. Med., **23**: 3, 267, December 1937.

8. Pavlov, I. P. Conditioned reflexes. Translated by G. B. Anrep, p. 430. Oxford Univ. Press, London 1928.

Lectures on conditioned reflexes. Translated by W. H. Gantt, p. 414, Martin Lawrence, Ltd., London 1938.

9. James, W. T. Morphological form and its relation to reflex action and behavior. Biology of the individual, Chap. 3, 28. Ass. Res. Nerv. Ment. Dis., **14**: p. 323, Williams & Wilkins, Baltimore, 1934.

10. Sutherland, G. F. Unpublished data.

APPENDIX

Summary of Case Histories

Patient 1.—A 24-year-old, white, native-born, unmarried female was admitted to the hospital complaining of lack of appetite, loss of weight and weakness of seven years' duration. For the past ten years she has complained of vertigo, tremor and has had occasional attacks of palpitation, nausea and abdominal pain. Physical examination showed a rough systolic murmur in the aortic area which was not transmitted. The G. I. series, spinal fluid and x-rays of the skull were within normal limits. Examinations of urine and blood were within normal limits. The serum sodium was 148.1 mgs. and the serum cholesterol was 90 mg. Diagnosis: Hysteria. Anorexia nervosa.

Patient 2.—A 34-year-old, white, native-born, divorced housewife was readmitted for the fourth time complaining of fainting spells and difficulty in walking. The patient had fainting spells almost once a month following appendectomy and suspension operation five years previously. After one of these fainting spells she had been in coma for four days. This was followed by complaints of sharp pain in the back and abdomen with vomiting. The fainting spells recurred after a hysterectomy. At that time she stated that she lost sensation in her left leg, there was no feeling in her bladder on urgency. After a lumbar puncture she regained normal bowel and bladder control and was much improved. Two months after this she was unable to move her left leg. During the most recent admission she developed a complete paralysis of her legs with transient blindness. Physical examination showed weakness of the left thigh and leg, left leg was dragged and the left foot was not put down flat on walking. There was diminution of sensation over an area on the left thigh, not corresponding to any neurological pattern. Laboratory examinations including electrocardiogram, x-rays of the skull were within normal limits. The conditional reflex studies were done during the last two months of the third admission. The patient was re-admitted after six months and the studies were then resumed. Diagnosis: Hysteria.

Patient 3.—A 45-year-old, white, married female was admitted for the third time to the psychiatric service complaining of feelings of agitation, sleeplessness, and depression. During her previous admissions she had been diagnosed as hysteria and had shown marked improvement during hospitalization. For the past month she had become depressed and was readmitted for further study. Physical examination showed an obese female with a flushed face. There was a marked exaggeration to the skin-stroke test. Examinations of blood and urine were normal. Blood pressure 184/140. Her mental state was characterized by feelings of hopelessness, fears that she was going crazy, some difficulty in breathing and palpitation. The conditional reflex studies were done for three months during the third admission. The patient was re-admitted after six months and the studies were then resumed. Diagnosis: Hysteria. Reactive depression.

Patient 4.—An 18-year-old, white, native-born, unmarried female was admitted to the hospital complaining of five attacks of the "horrors." These episodes were characterized by palpitation, nervousness, trembling, throbbing in her head and fear of going insane. She also complained of marked insomnia, feelings of anxiety, headaches

and dizziness. These symptoms were of four years' duration. Physical examination, examinations of blood and urine were within normal limits. Blood cholesterol was 156 mgs. X-ray of the chest showed thickening of the apical pleura on the right. Diagnosis: Anxiety neurosis.

PATIENT 5.—A 33-year-old, white, native-born, married male transferred from the medical service complaining of frequent attacks characterized by palpitation, shortness of breath, smothering sensations and feelings that he is going to faint and die. He has had these attacks off and on for the last three years. He also mentioned another type of spell characterized by dizzy feelings, sweeping feelings and staggering, which he has had since childhood. Physical examination showed a tall, thin man with a decidedly grayish cast to the skin, large ears and small face. There is a sparse, downy beard, scanty axillary and pubic hair of predominately feminine distribution. Thyroid was palpable. Testes could not be felt in the scrotum. Examinations of blood, urine, spinal fluid were within normal limits. B.M.R. —20. Electrocardiogram showed partial A-V block. Test for F.S.H. was negative. X-rays of the skull and chest were within normal limits. Diagnosis: Anxiety neurosis. Anterior pituitary hypofunction. Hypogonadism.

PATIENT 6.—A 24-year-old female was transferred from the medical service complaining of dyspnœa, nervousness, fatigue, difficulty in swallowing and tremor for the past ten years. In addition to these symptoms she complained of increased appetite since the birth of her first baby six months ago. The symptom of palpitation had been present on and off for this period of time. She described some occasional trivial obsessional thoughts. Since adolescence there had been several episodes of vomiting, and the first marked anxiety attack occurred five years ago. Since then she has had anxiety attacks every few months. During the last four months she has become more apprehensive, more sensitive and more tense. Physical examination was essentially negative. B.M.R. was +24. Blood cholesterol 152 mgs., fasting sugar 95 mgs., NPN 23 mgs., CO_2 combining power 27 mgs. Examination of blood and urine was negative. Two weeks after transfer to the psychiatric service, B.M.R. dropped to +3 on 5 mm. of potassium iodide, t.i.d. With a normal B.M.R. the symptoms of tension, attacks of anxiety and spells of nausea were the same. Diagnosis: Anxiety neurosis with obsessive features. Graves' disease.

PATIENT 7.—A 29-year-old, white, native-born, married male was admitted for the second time from the out-patient department complaining of nervousness, palpitation, difficulty in swallowing, trembling, tightness across the forehead, increased irritability and a fear of crowds and movies, for the past six months. In addition there were complaints of burning sensation in the epigastrium for the past two years. Physical examination was essentially negative. Examinations of blood and urine were negative. G. I. series showed a healed ulcer in the posterior wall of the duodenum. Blood cholesterol 164 mgs., B.M.R. +9. Diagnosis: Anxiety neurosis. Duodenal ulcer (?)

PATIENT 8.—A 30-year-old, white, married, native-born female was admitted with the complaint of recurring periods of depression for the last two years. The depressions are characterized by feelings of confusion, irritability, marked fatigability and some crying. There was no loss of appetite. The duration of the depression was from 2-3 days. Physical examination was negative. Lumbar puncture, x-ray of skull, and electroencephalogram were negative. B.M.R. varied from —25 to +13. Complete blood studies including sugar, non-protein nitrogen and cholesterol were within normal limits. Diagnosis: Reactive depression.

PATIENT 9.—A 46-year-old, single, native-born female was transferred from the medical service complaining of feelings of depression, weeping, headache, dizziness, and abdominal pains of four years' duration. The depression was characterized by crying, feelings of inferiority and fleeting suicidal ideas. These depressive episodes were of short duration. No marked disturbance in appetite or in sleep. Physical examination and laboratory studies revealed nothing abnormal. Diagnosis: Reactive depression. Hypochondriasis.

PATIENT 10.—A 49-year-old, white, married, native-born male was admitted to the hospital complaining of nervousness, fear of becoming insane and fear of jumping from high places. There were also numerous attacks characterized by palpitation, sweating, fear and shaking. The symptoms of shaking were of twelve years' duration. Physical examination showed that hearing was diminished bilaterally. There were a few unsustained nystagmoid jerks on lateral gaze. Left knee jerk greater than right. Blood pressure on lying was 120/80. This rose to 160/94 on standing. Laboratory examinations were negative except for x-ray of the chest which showed evidence of old pleurisy on the right side. Diagnosis: Anxiety neurosis.

LEVEL OF ADRENO-CORTICAL SUBSTANCE IN THE BLOOD DURING HYPOGLYCEMIC TREATMENTS FOR SCHIZOPHRENIA[1]

ESTHER BOGEN TIETZ, M. D., PH. D., AND SANFORD M. BIRNBAUM, M. S.

INTRODUCTION

Since the advent of the pharmacologic shock treatments for schizophrenia, great interest has centered about the means by which they achieve such amazing recoveries and improvements. The various therapies are so unlike in their application, in the time during which they last, and in their effects, that it was felt some fundamental mechanism must be operating in all. If this could be ascertained, the treatment could be facilitated and perhaps the choice of patients made much more effective, resulting in a higher percentage of cures and great saving in time and effort.

Sakel(25), Looney and Cameron(20), Gonda(12) and others have noted autonomic activity during insulin, metrazol and electric shock treatments. Gerard(11) and Himwich(17) likewise noted the autonomic changes observed in shock therapy without ascribing specific therapeutic effects to them.

Increased blood pressure during insulin shock was noted by Robinson(24); and Cannon(4) long ago stated that hypoglycemia causes sympathetic excitement. The influence of a low blood sugar on the neurovegetative regulation was demonstrated by Klemperer(18) during the insulin treatment for delirium tremens, basing her conclusions on the pulse rate changes. A fluctuating change in autonomic activity, with parasympathetic predominance in the first stage, sympathetic in the second, followed by parasympathetic during deep coma was described by Parker(22). He stated that the "stimulation of both sides of the autonomic may restore it to normal balance, if it is true that autonomic changes participate in the beneficial effect of insulin" but "these changes may be merely related to the functional disturbances in the endocrine and hypothalamic systems." Gellhorn and Domm(6, 10) concluded that both asphyxia and hypoglycemia seemed to elicit predominately signs of sympathetic and not of parasympathetic stimulation and that this phase of hypoglycemia seemed therapeutically important. Fortuyn (8) believed that increase of both sympathetic and parasympathetic components exists during hypoglycemia.

Farrell *et al.*(7) described the enlarging heart and increase of the systolic blood pressure during insulin shock therapy and spoke of the "therapeutic stimulation of the sympathetic system."

In order to determine more accurately the effect of hypoglycemia on sympathetic activity, several investigators have attempted to examine for the presence of pressor substances in the blood.

Brandt and Katz(2) used biologic tests and found that the venous and arterial blood of normal human beings is free of adrenalin. They were able, however, to demonstrate that both venous and arterial blood in hypoglycemia has a typical and marked "adrenalin character." Heilbrunn and Liebert(16) using the Trendelenburg tests on patients receiving insulin reported the "adrenalin" to be low in cases where the patient was deep in coma but high when there was heavy twitching.

In earlier experiments in our laboratory we attempted to make colorimetric chemical determinations of adrenalin in the blood of patients undergoing insulin shock, by the means of Shaw's(26) modification of the Whitehorn test. By this means we observed

[1] Read at the ninety-seventh annual meeting of The American Psychiatric Association, Richmond, Virginia, May 5-9, 1941.

From Longview State Hospital, Cincinnati, Ohio, and the College of Medicine, University of Cincinnati.

This study was financed through the National Committee for Mental Hygiene with funds granted by the Committee on Research in Dementia Præcox founded by the Supreme Council, 33rd Degree Scottish Rite, Northern Masonic Jurisdiction, U. S. A.

We also gratefully acknowledge the unfailing encouragement and support of E. A. Baber, M. D., superintendent of Longview State Hospital, and Douglas Goldman, M. D., clinical director and the staff of the hypoglycemia clinic for generous cooperation in the carrying out of these studies.

a rise in the "blood adrenalin" during coma resulting from insulin hypoglycemia(29).

That the sympathetico-adrenal mechanism is active, therefore, during insulin shock therapy is fairly evident. Whether such activity is of importance in the treatment can only be determined if it differs in the recovering cases as compared with the refractory ones.

A study of patients while in insulin shock (30) showed that, during the course of treatment, recovering patients showed an upward trend in temperature which was not present in unimproved cases.

Fulton(9) has stated that temperature regulation is affected by "acceleration of chemical transformations due to mobilization by adrenalin of carbohydrate reserves and to thyroid activity." "Both of these manifestations of hyperactivity," he stated, "may be produced by the hypothalamus." Barahal(1) also discussed the rôle of adrenalin in the low rectal temperatures in hypoglycemia.

Accordingly, the difference in the ability to maintain the temperature in "recovering" as compared with "refractory" schizophrenics undergoing insulin therapy suggested an essential homeostatic defect in the latter. The present study was carried out to obtain further evidence of difference in the ability of the recovering schizophrenics to meet the threat of hypoglycemia as compared with the reactions of the refractory cases.

Method

Determinations were made at regular weekly intervals throughout the course of treatment on 36 patients of whom 17 were women. We employed a modified Shaw test similar to that recently described by Raab(23). As a result of his studies this author has indicated that the substance measured by this test is not adrenalin alone —but an adrenalin-cortical compound which he indicates as A-C substance. We shall therefore refer in this article to the substance measured by the test as A-C compound.

The tests were made in the morning before the injection of insulin and again when the patient went into coma, judged clinically by failure to respond, usually by the presence of the Babinski test, heavy sweating and other signs indicating insulin shock. As it was found impossible to add anticoagulants to the blood without interfering with the procedure it was necessary to do the extractions at the bedside. 5 cc. of blood were taken from the cubital vein and added immediately to 5 cc. of 10 per cent trichloracetic acid. This was immediately shaken and allowed to stand for one-half hour. 10 cc. of 5 per cent trichloracetic acid was then added. The tube was inverted twice and filtered. The protein free filtrates thus prepared were kept on ice until tested. We have found that if the filtrates are kept in the ice box, they will remain unchanged for weeks and perhaps longer.

The method of Whitehorn as modified by Dr. Shaw was followed, although some modifications were made. Of the filtrate, 3 cc. is taken for each determination which gives us a result equivalent to ¾ cc. of whole blood. This filtrate is placed in a 50 cc. centrifuge tube and 2 drops of phenolphthalein added. The solution is then brought to a faint pink with normal and 1/10 normal sodium hydroxide. 1 drop of normal sulphuric acid is added to bring the solution to approximately pH4. At this point, by adding 2 cc. of a specially prepared aluminum hydroxide, mixing well and allowing to stand for approximately 10 minutes, we adsorb gluthathione and other interfering substances. After centrifuging the mixture for 2 minutes at 2000 r.p.m., the supernatant fluid is poured into another 50 cc. centrifuge tube containing 1 drop of phenolphthalein and 1.5 cc. of aluminum hydroxide. This mixture is brought to a definite pink with sodium hydroxide (normal and 1/10 normal) and is centrifuged as before. At this acidity, approximately pH8, adrenalin is absorbed by the Al(OH). The supernatant fluid is discarded and 3 cc. of slightly alkaline water is added to wash the precipitate. This is mixed well by shaking and again centrifuged. The supernatant fluid is again discarded and 2 cc. of distilled water added to the aluminum hydroxide and mixed well. At this time 7/10 cc. of arsenomolybdic acid (prepared at least 6 days before) is placed in each of six 6 cc. volumetric tubes. It is the change in the color of this substance which results from reduction by adrenalin which enables us to make the determination. Although we found, as Raab did, that the color was intensified by boiling for 8 or 10 minutes, we used a constant 5-minute boiling interval in order to compare our results with those that had been obtained by this method originally. Not more than 6 determinations were done at one time and a blank determination was run with every group. Tubes containing the arsenomolybdic acid are placed in a boiling water bath. From this point each step must be timed accurately. An acid sulphite solution is prepared by adding 14 cc. of 1-1 sulphuric acid with 2 cc. of fresh sodium sulphite. One minute after placing the tubes in boiling water we add 7/10 cc. of 4 per cent hydroxide to the contents of each centrifuge tube at 15" intervals. 2 minutes after the first addition of alkaline we add 2 cc. of acid sulphite to these tubes at the same intervals. They will clear im-

mediately. At this time the arsenomolybdic reagent will have been heating for 5 minutes and the samples are added in the same order at the same intervals. 5 minutes after this addition the tubes are removed from the boiling bath in the same order and at 15″ intervals placed in cold water. Not less than 10 minutes later the depth of color is read in a photelometer against a blank made at the same time. The blank is prepared by adding 2 drops of phenolphthalein to 1½ cc. of aluminum hydroxide in a centrifuge tube. This is brought to a faint pink at the second absorption step along with the others and carried through in identical fashion.

In order to compare one result with another, the photelometer readings were converted into extinction coefficients. The values of our determinations are expressed as these coefficients throughout our studies. This is to avoid making the assumption that the color developed by pure adrenalin chloride solutions was exactly comparable with our results. 5 cc. cups in a Cenco-Sheard-Sanford photelometer was used with a red glass filter to increase the sensitivity of the reading.

The reagents were prepared essentially as directed by Dr. Shaw except that the aluminum hydroxide solution was washed 4 times by centrifuging instead of filtering. The aluminum hydroxide must be kept on ice to preserve its absorptive qualities. Even with this precaution it was found necessary to continually check it as the absorptive qualities of the aluminum hydroxide are not reliable for more than a week. The pH of each preparation of aluminum hydroxide must also be adjusted with a few drops of 1-1 H_2SO_4 so that at the first absorption the mixture will reach pH4-4.2. In our experiments the aluminum hydroxide and other reagents were continually checked by running duplicates on specimens from the previous week before running each week's test. The sodium sulphite solution was prepared by dissolving 1 gram of anhydrous sodium sulphite in 10 cc. of water. This was prepared fresh daily. Other reagents were prepared as directed by Shaw. It was found that phenolphthalein solution more than 5 or 6 hours old gave extremely high blank readings.

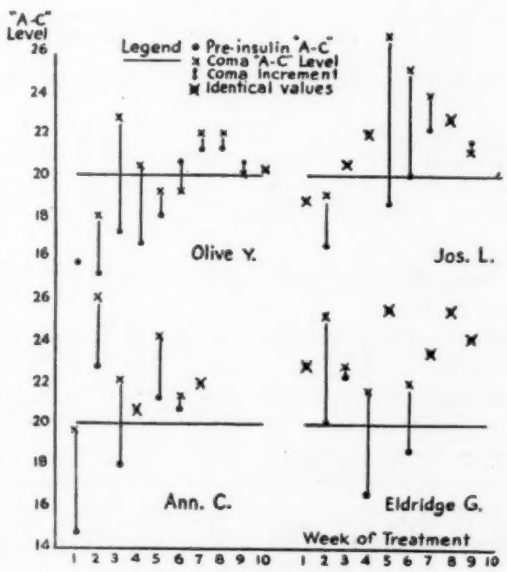
The test as we are doing it at present gives a much deeper color with the standard adrenalin than we formerly obtained. Furthermore by reading against the blank we believe that our results are much more reliable. Although the direction of increase during insulin shock remained the same, our values now range from extinction coefficients of 15.3 to 26 which, if due to pure adrenalin chloride, would be equal to a range from 8 to 12 γ per 100 cc. This is more consistent with the findings of Raab and other investigators.

We were unable to duplicate Raab's experiment on the interference by ascorbic acid. In our experiments 100 gamma ascorbic acid gave so little color that the concentrations present in the blood could not possibly interfere with the tests. Raab also suggested that insulin may prove an interfering factor but we found that it showed no development of color in the final tests.

Results

In a consideration of the results 6 cases were discarded either because they were diagnosed manic-depressives or because treatment was not carried through on them. Twenty-nine cases were left for study.

The pre-insulin and coma A-C values were plotted to give their course throughout the treatment in each case. The coefficient extinction of 20 was arbitrarily selected as a base line. When these graphs were compared two strikingly different types of curves could be singled out.



Graph 1.—Recovering schizophrenics.

The first type, of which there were 4, showed a rise in the base line so that after the 4th to 6th week all the pre-insulin values were above the base line. The coma A-C values in these cases at first increased markedly and then approached the pre-injection values. There was therefore, in these cases, an almost constant high A-C value in each day these cases were tested for the last few weeks of treatment even after injection of coma-producing doses of insulin.

That the stability of these A-C values was not due to constant sugar values or the use of doses of insulin too small to induce coma

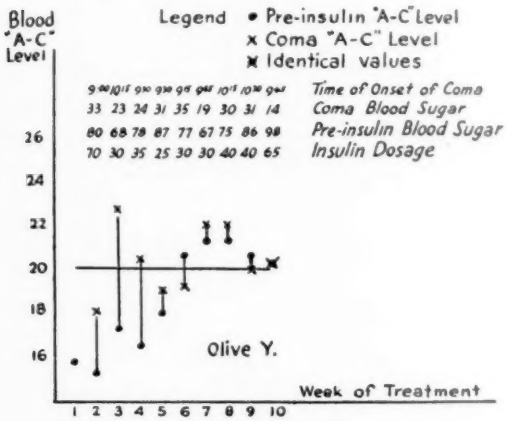
A-C VALUES WEEKLY DURING HYPOGLYCEMIC TREATMENTS

Case	Diag.	Duration	Result	Weeks										
				1	2	3	4	5	6	7	8	9	10	11
A. A.	21	5 mo.	B	13.8	17.2	17.2	16.3	20.0	18.7	14.8	16.6	18.0	17.2	....
			LTV	14.5	20.6	17.2	20.6	20.6	20.0	19.2	20.6	18.7	20.0	....
M. A.	182	5 yr.	D	14.1	18.0	20.0	19.2	16.0	20.0	17.6	17.6	16.0	16.6	....
				15.3	22.8	21.3	25.2	20.6	22.0	20.0	21.3	22.0	18.7	....
J. B.	184	30 mo.	B	20.6	18.0	16.3	16.0	....	....	....	....	....	....	....
			LTV	18.7	21.3	20.0	18.7	....	....	....	....	....	....	....
G. B.	184	9 yr.	B+	21.3	21.3	22.3	20.6	20.3	20.6	21.3	25.2	....	....	....
			LTV	18.0	23.9	24.3	26.0	21.3	22.8	22.0	26.0	....	....	....
W. B.	182	11 mo.	A−	16.0	16.3	19.2	16.0	16.6	18.0	17.2	15.7	16.6	16.6	....
			LTV	16.6	16.3	19.2	20.0	22.8	18.0	20.0	18.0	20.6	19.2	....
D. B.	185	2 yr.	B	16.0	16.3	21.3	17.2	14.8	16.6	....	....	....	....	....
			LTV	18.0	16.3	22.8	20.6	20.9	20.6	....	....	....	....	....
E. C.	184	2 yr.	B	17.2	16.9	17.2	19.6	16.6	17.2	19.2	18.0	21.3	....	....
			LTV	17.2	17.2	18.7	23.5	16.6	23.6	16.0	18.0	24.3	....	....
A. C.	185	5 mo.	A	14.8	22.8	18.0	20.6	21.3	20.9	22.0	....	....	....	....
			LTV	19.6	26.0	22.0	20.6	24.3	21.3	22.0	....	....	....	....
M. D.	184	7 mo.	B	14.8	16.0	20.0	20.0	17.6	18.0	16.6	18.0	17.2	19.6	....
				17.2	17.2	20.6	21.3	20.0	18.0	21.3	20.0	20.3	20.6	....
A. D.	182	5 yr.	B−	15.7	15.3	16.6	16.6	16.3	14.8	14.1	17.2	....	....	....
			LTV	15.3	16.0	16.6	20.6	21.3	18.7	19.2	20.6	....	....	....
R. G.	20	4 mo.	B−	16.6	16.0	14.8	16.0	16.6	18.4	18.4	18.0	....	....	....
			LTV	21.3	16.6	16.6	19.2	19.2	19.0	18.9	22.8	....	....	....
N. G.	181	21 mo.	B	19.2	21.3	22.0	25.6	20.6	21.3	23.6	21.3	20.6	....	....
				20.0	24.3	24.7	28.3	22.8	26.0	24.3	22.8	22.8	....	....
E. G.	182	1 yr.	A−	22.8	20.0	22.4	16.6	25.6	18.7	23.6	25.6	24.3	....	....
			LTV	22.8	25.2	22.8	21.7	25.6	22.0	23.6	25.6	24.3	....	....
J. H.	184	4 mo.	A	18.0	20.0	21.3	....	....	....	....	....	....	....	....
			LTV	18.0	20.6	26.0	....	....	....	....	....	....	....	....
E. K.	181	2 yr.	B	19.2	17.2	20.0	20.6	21.3	22.0	20.0	21.3	17.2	....	....
			LTV-RET	25.2	22.8	24.3	20.6	22.0	25.2	22.8	26.0	19.2	....	....
M. L.	185	5 mo.	D	17.2	16.6	19.2	18.3	18.7	20.0	20.6	18.7	....	....	....
				17.2	22.0	22.0	22.0	23.6	20.0	26.0	20.0	....	....	....
J. L.	184	8 mo.	A	18.7	16.6	20.6	22.0	18.7	20.0	23.2	23.6	22.8	....	....
			LTV	18.7	19.2	20.6	22.0	26.8	25.2	24.0	23.6	22.0	....	....
O. L.	184	3 yr.	.....	17.2	16.3	16.0	18.4	18.7	17.6	21.3	....	....	....	....
				19.2	20.9	19.2	23.0	22.0	21.3	24.3	....	....	....	....

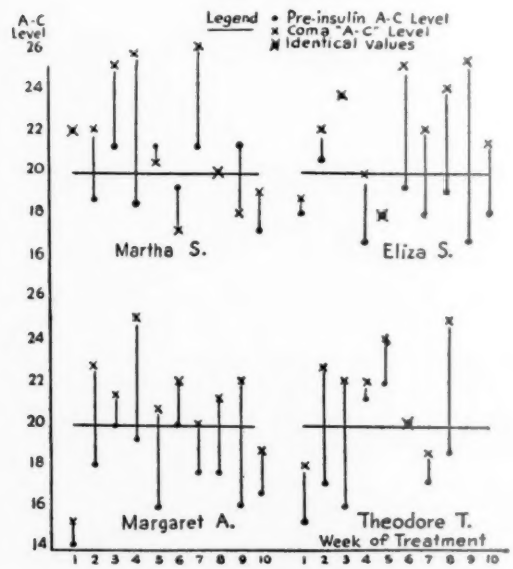
A-C VALUES WEEKLY DURING HYPOGLYCEMIC TREATMENTS

Case	Diag.	Duration	Result	Weeks										
				1	2	3	4	5	6	7	8	9	10	11
G. L.	171	4 yr.	C	20.0	17.2	17.2	18.0	....	....	....	....	....	....	....
			LTV	22.8	23.6	20.0	17.2	....	....	....	....	....	....	....
M. L.	185	4 yr.	B	15.0	14.5	19.2	16.0	15.3	17.2	16.6	16.6	15.3	17.2	....
				18.0	18.0	16.6	18.0	20.6	20.0	22.8	19.2	22.8	21.3	....
F. M.	184	1 yr.	D	18.0	22.8	19.2	21.7	18.0	23.6	17.6	18.0	18.9	16.0	19.2
				21.3	21.3	24.3	27.6	20.0	24.3	18.0	23.6	18.9	19.2	22.0
I. M.	184	5 mo.	B+	18.0	20.0	14.8	19.2	....	15.3	16.6	19.2	16.0	....	....
			LTV	23.6	19.2	14.8	19.2	....	22.0	18.7	22.0	19.2	....	....
J. P.	172	8 yr.	A	22.8	20.0	24.3	16.6	22.0	18.0	21.3	22.0	....	....	....
			LTV	22.8	25.2	26.0	25.2	26.8	22.8	22.0	27.6	....	....	....
S. P.	184	3 mo.	B+	18.0	21.3	15.3	16.0	18.7	14.8	18.7	18.0	....	....	....
			LTV	12.0	22.0	19.2	18.7	19.2	16.0	18.7	19.2	....	....	....
M. P.	181	10 yr.	B	18.0	19.2	20.6	20.0	20.6	20.6	20.6	19.2	17.6	....	....
				22.0	22.0	21.7	20.0	21.3	22.8	22.0	22.8	21.7	....	....
R. R.	184	1 yr.	D	20.0	20.3	18.7	19.2	22.0	20.0	22.0	20.0	19.2	18.0	20.0
			LTV-RET	22.0	20.3	22.0	26.4	23.6	24.3	22.0	22.8	22.0	22.8	19.6
J. R.	182	7 mo.	C	16.0	20.6	15.3	17.2	19.2	18.7	18.0	18.0	17.2	....	....
			LTV	20.0	20.6	20.6	18.7	19.2	22.0	18.0	18.0	18.4	....	....
T. S.	182	5 mo.	C	21.3	21.3	25.2	19.2	20.0	20.6	....	....	....	....	....
				22.8	30.0	26.4	19.2	25.2	22.8	....	....	....	....	....
M. S.	122	18 mo.	C	17.2	17.2	22.8	20.6	26.8	22.8	22.0	19.2	20.0	18.0	....
				20.9	19.2	24.3	16.6	26.8	22.8	22.0	26.8	21.3	25.2	....
A. S.	184	5 yr.	B	15.3	16.0	16.0	20.0	16.0	18.7	20.6	15.3	....	....	....
			LTV	15.3	16.0	22.8	19.2	16.6	21.3	18.0	18.0	....	....	....
E. S.	182	6 yr.	C	18.0	20.6	23.9	16.6	18.0	19.2	18.0	19.2	16.6	18.0	....
			LTV-RET	18.7	22.0	23.9	20.0	18.0	25.2	22.0	24.3	25.6	21.3	....
L. S.	172	10 yr.	A	18.0	23.6	18.3	20.6	22.8	20.6	20.6	....	....	....	....
			LTV	22.8	23.6	18.3	25.2	26.8	25.2	20.0	....	....	....	....
M. S.	185	15 wk.	B	22.0	18.7	21.3	18.7	21.3	19.2	21.3	20.0	21.3	17.2	....
				22.0	22.0	25.2	25.6	20.6	17.2	26.0	20.0	18.0	19.2	....
T. T.	182	20 yr.	C	15.3	17.2	16.0	21.3	22.0	20.0	17.2	18.7	....	....	....
			LTV	18.0	22.8	22.0	22.0	24.3	20.0	18.7	25.2	....	....	....
E. W.	185	11 mo.	B	18.7	18.0	19.2	24.3	22.0	....	....	....	....	....	....
			LTV	20.6	17.2	21.3	20.6	19.2	....	....	....	....	....	....
O. Y.	183	8 yr.	A	15.7	15.3	17.2	16.6	18.0	20.6	21.3	21.3	20.6	20.3	....
				15.7	18.0	22.8	20.6	19.2	19.2	22.0	22.0	20.0	20.3	....

is shown by Graph 2. Examination of the results obtained clinically in all cases with this type of curve showed them to be recoveries of an A type. All five went home after treatment and are maintaining excellent adjustments except that one patient is having difficulty in holding a job.



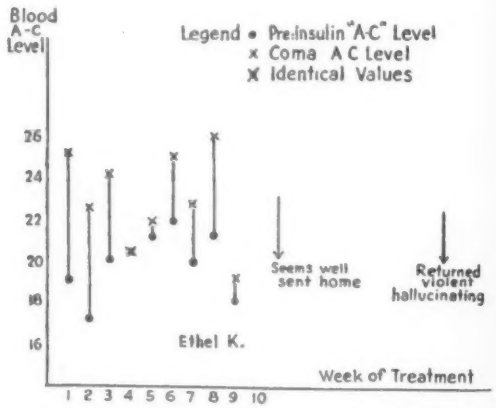
GRAPH 2.—Relation of blood sugar to blood "A-C" level.



GRAPH 3.—Insulin failures.

Another group of cases showed a quite different picture (Graph 3). In the last month of treatment the pre-insulin levels in these cases dropped and in most of them the coma A-C values showed increasingly higher increments. In other words these patients were unable to maintain high A-C values although some of them reacted with wide increases during the severe strain of insulin hypoglycemia. Of such cases (13 in all) none made a complete recovery although 8 were allowed to go home at the end of their treatment. Of these 8, 4 have already had severe relapses necessitating return in a short time.

Of 11 additional cases who showed low A-C values in the pre-insulin levels throughout treatment but who had relatively smaller increments during coma at the end, one had apparently a good remission but soon relapsed, one showed no improvement and 8 have made social improvement but retained schizophrenic characteristics.



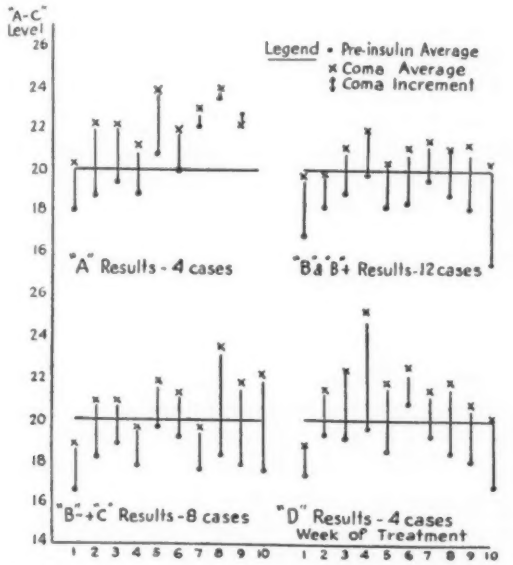
GRAPH 4.—Blood "A-C" levels in a schizophrenic with a subsequent relapse.

A study of Graph 4 shows that although this case seemed well at the end of her treatment there was a marked drop in her last A-C values. We were not surprised when she returned within 3 weeks in another acute schizophrenic episode. It seemed that in this case at least the A-C values gave a truer record of the state of the schizophrenic process than was obtained by clinical study.

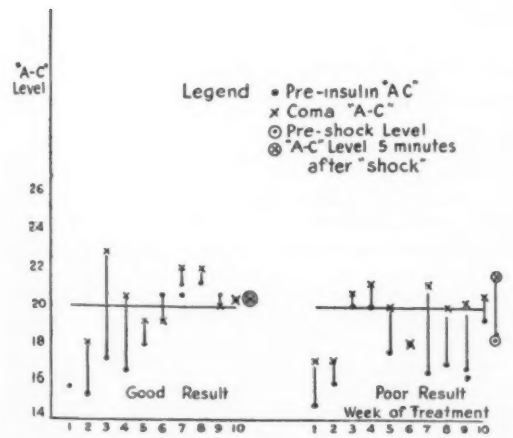
When all of the 29 schizophrenics who completed the treatments are grouped according to the usual result scale and the average for each weeks A-C level are calculated we obtain the following picture.

It would seem therefore, that there is a real relationship between the results achieved by insulin shock therapy and the character of the changes in A-C levels. That these levels are not due simply to the fact that the patients are calmer seems likely when

we consider that in some cases the patients appeared fairly well and still failed to have what we consider to be evidence of recovery by elevation of the residual A-C in the blood.


"A-C" Level
Legend • Pre-insulin Average
× Coma Average
‡ Coma Increment
"A" Results - 4 cases
"Ba" "B+" Results - 12 cases
"B-" "C" Results - 8 cases
"D" Results - 4 cases
Week of Treatment

GRAPH 5.—Averages of "A-C" levels. Arranged according to results.



GRAPH 6.—Effect of electric shock on "A-C" levels.

The remarkable stability, moreover, of the high A-C values in recovered patients is demonstrated when we compare the effect of afternoon electric shocks in a good case as compared with a refractory one. (Graph 6.) Usually we find that both metrazol and electric shock-induced convulsions result in rises in blood "A-C" levels.

COMMENT

The retention of a fairly high and constant level of adrenocortical substance in the blood seems, from our work, to be a characteristic of the recovered schizophrenic who has undergone insulin therapy. That this may indicate an improved ability to maintain homeostasis seems likely. Previous work of Cameron and Jellinek(3) on pulse rate and blood pressure caused them to state that prior to treatment there is some degree of adrenosympathetic impairment and this is largely overcome by treatment in recovered patients and relatively unaffected in not recovered patients. Other studies on parotid secretions (Strongin, Hinsie and Harris)(28) and on blood potassium values (Harris, Blaloch and Horwitz)(15) gave further evidence of changes in autonomic functions during insulin therapy. Gellhorn (10b) has shown that the sympathetic stimulation resulting from anoxia and metrazol injections is due to central effects. Our work seems to be quite consistent with his recent statement that "the increased sympatheticoadrenal discharge occurring in insulin hypoglycemia tend to restoration of normal conditions"(10a).

That autonomic disorders exist in schizophrenia has been suggested by many authors. In fact, Kraepelin(18b) stated that in dementia præcox there is a "loss of that permanent coloring of the background of mood which in normal people influences all chance oscillations of the emotions, equalizing and checking them." He described wide and sluggish pupils, wide spread vasomotor disorders, poor blood pressure and pulse responses to cold and pain, increased salivation, absent or irregular menstruation, increased numbers of white cells in the blood, low basal metabolism and sleep disturbances. Nolan Lewis(19) described the circulatory inadequacy in the dementia præcox cases which he said "lack the ability to react in a satisfactory compensating hypertrophy when occasion demands."

Grinker(14) has stated that "the biological data resulting from studies of schizophrenics suggests strongly a deficiency in some central autonomic coordinating process, measured clinically in defective homeostasis." And Singer wrote "psychoses are

disorders resulting from damage to the central machinery of the autonomic integration"(27).

No one can deny McFarland's statement that schizophrenics lack "the free expression of human personality made possible by the autonomic regulation of the internal constants."(21) That insulin therapy in some cases restores the ability to regulate this mechanism is apparent. The fact that some patients fail to respond to the therapy furthermore may be due to irreversible damage in these cases or to constitutional inadequacies in the autonomic mechanisms. Cotton and Lewis(5) showed that the retinal vascular bed is smaller in patients who do not improve or who deteriorate. We believe moreover that the failure to obtain a stable high blood A-C value as a result of shock therapy may be another sign of the constitutional or irreversible defect present in the schizophrenic patients who do not react to this therapy.

The failure to achieve stable high A-C values in cases showing social improvement sufficient to leave the hospital but who retain some schizophrenic characteristics, agrees well with the psychologic findings before and after insulin therapy, which show that even though improvement is gained, schizoid reactions may be shown in the responses to the Rorschach test at the end of treatment(13).

That high blood A-C levels were present in recovered schizophrenics may seem inconsistent with the observations that few signs of sympathetic excitement are present in the normal person. Gellhorn(10a) stated that "epinephrine decreases the reflex responses of the sympathetic system." Therefore, when the level of adrenalin in the blood is at a steadily high level, we might expect fewer signs of sympathetic overactivity. This fits in well with a few unpublished observations we have made in patients with oculogyric crises—showing that just before the onset of the crisis the patients have very low blood A-C values although their pupils are widely dilated, they have "hot flashes" and "feel jittery," and their blood pressures rise. That the inhibiting affect of high blood A-C may be on the hypothalamic centers is certainly possible and deserves further study.

The above findings suggest many possibilities for research into the mechanism of psychic stability. It would be of great interest to find whether the dilated pupils, relaxed G-I tract and other sympathetic symptoms found in schizophrenics are accompanied by low blood A-C values as these studies suggest. We believe moreover that studies in the blood A-C values in normal individuals under changing physiological conditions may yield an insight in the mechanisms of stability in the presence of shock of many sorts.

SUMMARY

1. Chemical studies on the levels of adrenalin-cortical material in the blood show marked differences in the cases who recover from insulin shock therapy as compared with those who fail to recover.

2. The curves of recovered cases are characterized by a rising residual A-C level and a stability in the amounts present even under the stress of hypoglycemic coma and electric shock.

3. Failures are characterized by a persistently low A-C value with great susceptibility to change when shocks are applied.

4. The significance of these findings for an understanding of schizophrenia is discussed.

BIBLIOGRAPHY

1. Barrahal, Hyman S. The mechanism underlying the low rectal temperature in hypoglycemia, the rôle of adrenalin. Psychiat. Quart. **12**: 514, July 1938.

2. Brandt, F., and Katz, G. Ueber den Nachweis von Adrenalinsekretion beim Menschen. Ztschr. f. klin. Med., **123**: 23-29, 1933.

3. Cameron, D. E., and Jellinek, E. M. Physiological studies in insulin treatment of acute schizophrenia. Endocrinology, **25**: 100, July 1939.

4. Cannon, W. B., McIver, M. A., and Bliss, S. W. A sympathetic and adrenal mechanism for mobilizing sugar in hypoglycemia. Am. J. Physiol., **69**: 107-116, 1924.

5. Cotton, J. M., Lewis, Nolan D. C., and Egenhofer, A. W. Vascular red of the retina in mental disease. Arch. Neurol. Psychiat., **43**: 891-900, May 1940.

6. Domm, Sheldon, and Gellhorn, Ernst. Influence of insulin and of stimulation of the sympathetic nervous system on the blood. Arch. Neurol. Psychiat., **43**: 726-735, April 1940.

7. Farrell, M. J., and Vassaf, Etem. Effect of insulin shock on the heart and blood pressure in

treatment of schizophrenia. Arch. Neurol. Psychiat., **43**: 784-791, April 1940.

8. Fortuyn, Jan Droogleever. Hypoglycemia and the autonomic nervous system. J. Nerv. Ment. Dis., **93**: 1, January 1941.

9. Fulton, J. F. Central levels of autonomic function with particular reference to the endocrine organs. Revue Neurologique, **72**: 1939-1940.

10. Gellhorn, E. Physiologic studies of "shock therapy." Arch. Neurol. Psychiat., **42**: 564, September 1939.

10a. Gellhorn, E. The internal environment and behavior, II. Am. J. Psychiat., **97**: 5 March 1941.

10b. Gellhorn, E. Physiological and pharmacological investigations on the nature of hypothalamic excitation. Am. J. Psychiat., **97**:4, January 1941.

11. Gerard, R. W. Mechanisms of action of "shock therapies." Abstract from Arch. Neurol. Psychiat., **42**: 564, September 1939.

12. Gonda, Victor E. Treatment of mental disorders with electrically induced convulsions. Diseases of the nervous system, Vol. II, No. 3, March 1941.

13. Graham, Virginia Taylor. Psychological studies of hypoglycemia therapy. J. Psychol., **10**: 327-358, 1940.

14. Grinker, Roy R. Hypothalamic functions in psychosomatic interrelations. Psychosom. Med., **1**: 1, January 1939.

15. Harris, Myers M., Blaloch, Joseph R., and Horwitz, William A. Metabolic studies during insulin hypoglycemia therapy of the psychoses. Arch. Neurol. Psychiat., **40**: 116-124, July 1938.

16. Heilbrunn, Gert, and Liebert, Erich. Observations on the adrenalin level in the blood serum during insulin hypoglycemia and after metrazol convulsions. Endocrinology, **25**: 3, September 1939.

17. Himwich, H. E., Martin, S. J., Alexander, F. A. D., and Fazekas, J. F. Electrocardiographic changes during hypoglycemia and anoxia. Endocrinology, **24**: 536, 1939.

18. Klemperer, Edith. Die Wirkung des Insulins beim Delirium tremens. Monatsschrift f. Psych. u. Neur., **74**: 163, 1929.

18b. Kraepelin, Emil. Dementia præcox and paraphrenia (translation). E. and S. Livingstone, Edinburgh, 1919.

19. Lewis, Nolan D. C. The constitutional factors in dementia præcox. Nervous and Mental Disease Publishing Co., New York and Washington, 1923.

20. Looney, J. M., and Cameron, D. E. Proc. Soc. Exper. Biol. Med., **37**: 253, 1937.

21. McFarland, Ross A. The internal environment and behavior, Part I. Introduction and the rôle of oxygen, Am. J. Psychiat., **97**: 4, January 1941.

22. Parker, C. S. Observations of the autonomic functions during the hypoglycemia treatment of schizophrenics. J. Ment. Sci., **86**: 645-659, July 1940.

23. Raab, W. The presence and chemical determination of adreno-cortical (AC) compounds in the blood. Endocrinology, **28**: 325-336, February 1941.

24. Robinson, G. Wilse, and Robinson, G. Wilse, Jr. Studies in delayed awakening in insulin shock therapy (Sakel): II. Blood pressure observations and their possible interpretation. J. Nerv. Ment. Dis., **91**: 5, May 1940.

25. Sakel, H. Neue Behandlungsmethode der Schizophrenie. Perles, Leipzig, 1938. (English translation, Monograph Series, New York.)

26. Shaw, Frank Herbert. The estimation of adrenaline. Biochem. J., **32**: 19-25, 1938.

27. Singer, H. D. Phychosis and the central autonomic nervous system. J. A. M. A., **110**: 2048, June 18, 1938.

28. Strongin, E. I., Hinsie, L. E., and Harris, M. M. Studies in parotid secretions of patients before, during and after insulin hypoglycemic therapy. Psychiat. Quart., **12**: 505-513, July 1938.

29. Tietz, Esther Bogen, Dornheggen, Harry, and Goldman, Douglas. Blood adrenalin levels during insulin shock treatments for schizophrenia. Endocrinology, **26**: 641-644, April 1940.

30. Tietz, Esther Bogen, Nadler, C., and Klemperer, E. A statistical study of temperatures in hypoglycemic coma. Journal of Laboratory and Clinical Medicine, **27**: 11-15, October 1941.

OPIATE WITHDRAWAL TREATED WITH INDUCED HYPOGLYCEMIC REACTIONS

SIDNEY J. TILLIM, M.D.

The Long Island Home, Amityville, N. Y.

The problem of treating addicts during their period of enforced abstinence or withdrawal period has intrigued the medical profession for decades. Opiate addiction is a growing medico-social problem. It is a disease that, in this country alone, profoundly affects the life of several hundred thousand people. The number of addicts has repeatedly increased in the wake of social unrests such as wars and economic depression(1). A further rise in the incidence is probable after the present world-wide upheaval. The strain of social adjustment or readjustment seems to increase the susceptibility to addiction in some individuals. Aside from the adventurous or pleasure-seeking addicts there are thousands of accidental addictions through legitimate prescriptions by physicians. The unsatisfactory medical status has undoubtedly discouraged early calls for help by these innocent victims. To get them early under care an effective aid is needed which can be promised without equivocation.

The treatment of addicts is still in the realm of experimental therapeutics. Many "cures" or specific treatments have been reported(1-3) and need not be discussed. However, two treatments reported in 1941 deserve mention to emphasize the continuing need for an effective treatment. Newman and Berris(4) treated 3 patients with artificial hibernation and obtained "most dramatic and hopeful results." The method consists of 30 to 72 hours narcosis and evipal or sodium pentothal supplemented with rectal or stomach instillations of paraldehyde while maintaining body temperature at 85-88 Fahrenheit. During treatment the patients show tremors and restlessness. They "awaken with sore muscles, diarrhea, abdominal cramps and nervousness, but well satisfied not to have to continue the drug." The other method is the use of metrazol convulsions to aid in the rapid withdrawal of the opiate (5). The authors treated 10 patients. Four patients discontinued their treatments at or before the 4th convulsion. Four patients required morphine for 14 days and one abandoned treatment the 13th day, before the last fraction of the opiate was withdrawn. The widely recommended conservative management by abrupt or rapid withdrawal, within less than 14 days, according to the patient's physical ability to suffer, is little more encouraging. Hypnotics, sedatives and analgesics are of no practical value; some addicts are actually made worse by exciting "an ugly and unreasonable mental state"(6).

In a previous publication(7) the author described in detail the treatment of 7 addicts by repeatedly induced hypoglycemic reactions. The present paper gives further experiences with this method and reports 8 additional cases. All the patients were accepted under a voluntary status, yet none left the hospital before the 9th day of complete abstinence.

Report of Cases

1(1418). A married man, age 37, admitted May 13, 1941, and discharged June 8, was addicted to morphine more than 10 years. He claimed his addiction began during an attack of inflammatory rheumatism. He had led a rather improvident life; he had been a delinquent minor, a prize fighter, a soldier and more recently an advance agent for carnivals. When admitted he had an acute gonorrheal urethritis, and had had two previous infections. He had experience with opium, cocain, heroin and morphine successively. The morphine requirement was 7 grs. per day taken intravenously. In 1940 his sister, a physician, treated him by slow withdrawal of the opiate.

Course in the Hospital.—He received insulin injections on a 24-hour basis for 4 days, and only daytime injections until the 9th day. No other form of sedation was required. During the last two weeks in the hospital he was occasionally restless and a little depressed. At such times he received 5 grs. of barbital at night. He was greatly improved in health and gained 8 lbs. before leaving the hospital. After a visit on May 18 his sister reported the patient as saying "he had no craving for the drug as compared with the symptoms he experienced under my treatment."

2(1476). A single woman, age 29, admitted July 7, 1941, and discharged Aug. 21, was a morphinist approximately 10 years. She was the older of two daughters of an intelligent compulsive asthenic widow. The patient and her sister were asthenic neurotics, intelligent but useless. The patient had always been delicate in health. At 18 she suffered from an obscure illness for about six months, followed by recurrent attacks of asthma. Shortly she became refractory to adrenalin and required morphine for complete relief. She had two previous hospitalizations for the addiction, in addition to several enforced reductions at home, whenever the dosage exceeded 6 grs. per day. Her sister acted as keeper of the morphine.

Course in the Hospital.—Insulin therapy was administered on a 24-hour basis for one week and at irregular intervals for several additional days. During the 2nd week she had a severe attack of asthma which adrenalin did not relieve, but insulin did stop the attack. Two subsequent asthmatic attacks were sufficiently mild to pass without any special treatment. She voluntarily extended the stay in the hospital, apparently because she was enjoying the freedom from family domination. She had occasional brief periods of restlessness and anxiety which caused her to ask for a sedative at night; 1½ grs. of seconal usually served well. Before leaving the hospital she had gained in weight from 101 to 110 pounds, the best weight in 12 years.

3(1607). A single woman, aged 28, admitted Oct. 25, 1941, and discharged Nov. 22, was addicted to opium for 1½ years. She was brought to the hospital by her mother who was a flighty, nervous and domineering individual. Both of them were extremely unreliable and emotionally unstable. Until the age of 5 she boarded with strangers. Between 5 and 14 she lived at home with a stepfather and half-siblings. She did not get along well and was sent abroad to live with relatives in Belgium. She returned home at the age of 17 and soon married to get away from family supervision. During the next three years she tried smoking opium and once contemplated suicide. In 1938 she broke off a love relationship and afterwards tried the use of cocain a few times. At this period she became depressed for one year; she was without interest, lost weight and was amenorrheic. In 1939 she met an opium smoker and soon went to live with him, he provided her with the opium. A few weeks before admission because she was being cheated in her supply of the opiate, she began to have episodes of fear of losing her mind, feelings of suffocation, confusion and an irresistible urge to tear off all her clothing above the waist. A dose of the opiate always relieved the attack. In a panic over her plight she confided to her mother and was thus hospitalized.

Course in the Hospital.—For administrative reasons insulin therapy was delayed two days. In this period she received large doses of barbiturates in addition to small amounts of morphine. She was first seen by the author Oct. 27. She was hyperemotional, threatened to leave the hospital, and showed withdrawal symptoms. Insulin on a 24 hour schedule was given for three days and at irregular intervals until the 8th day. During the 5th hospital day while attending recreation activities she had a nervous episode similar to those described. There was another milder reaction a few days later. With the beginning of the insulin therapy no other sedatives were necessary. She was in excellent health and had gained approximately 10 pounds in weight when released from the hospital.

4(1644). A married woman, age 67, admitted Dec. 10, 1941, and discharged Dec. 28, had been a morphinist for several years. She was raised in an opulent environment, of French parentage, had a "finishing school" education and married at 25. A year later she lost her right leg by amputation because of a sarcoma. In the succeeding years she was thoroughly spoiled by favoritism and indulgence. She had been a proud, determined and intelligent individual. After emerging from a reactive depression she took over the duties of the home, and even carried through three pregnancies. Since the amputation she often suffered neuralgic pains in the stump or severe gastrointestinal upsets. These often necessitated morphine injections. For years she had established a daily program of epsom salts and milk of magnesia in the morning, some sedative in the afternoon and evening, and two or three highballs before dinner. In 1934 a siege of arthritis required morphine three times a week. In 1939 she admitted her addiction. Attempts to use substitute injections of hyoscine and atropine failed. On admission her requirement was 1 gr. of morphine per day. She was an emotionally labile, capricious and nasty person, intolerant of the slightest inconveniences.

Course in the Hosiptal.—Insulin therapy was begun with the first signs of withdrawal. Symptoms were well controlled and adequate rest provided until the 3d night when she developed severe neuralgic pains with jerking and twitching of the stump. She insisted it was due to a change in the weather and only morphine can bring relief. Under insulin she dozed at short intervals, the muscular activity lessened, and she was definitely less complaining. When the hypoglycemic reaction was prolonged she lost consciousness and developed strong generalized myoclonic activity which threatened to precipitate a convulsion. Her age and the well marked arteriosclerosis contra-indicated allowing a convulsion and the hypoglycemia was terminated by an intravenous injection of glucose. She awakened in a state of panic, confused and fearful and was given a ½ gr. morphine. In 15 minutes she had regained full consciousness and composure. There were no further complications, the neuralgia did not recur, no further morphine or other sedative was required and the insulin treatments were continued for an additional 5 days. Pains in the hips and thighs during the 4th and 5th days which she identified as her former rheumatic pains were relieved by the insulin injections without any other medication. After insulin therapy was discontinued she insisted on having sedative medication at night

because she wasn't going to be deprived of "sleeping medicine," she was too old to change now. Five grains of barbital at bed time and 1½ grs. seconal later in the night gave her 7 hours sleep. She was in high spirits and much improved health when she left the hospital.

5(1647). A divorced male age 53, admitted Dec. 14, 1941, and discharged Dec. 31, was addicted to pantopon for one year. He was of Italian descent from a wealthy family. At 20 he was addicted to morphine for 6 months following a hernia operation. For years he served in the army and foreign diplomatic service. At 42 he married and divorced 8 years later because of sexual impotency, though not impotent in extra-marital affairs. In 1939 he suffered from an urticaria which was resistant to therapy. In 1940 it was succeeded by painful swelling of his feet, variously diagnosed as gout, rheumatism and allergy. Opiates were required to relieve the pain. He was given pantopon because it was presumably less habit forming. An attempt to cure his addiction by prolonged narcosis with avertin and sodium amytal was abandoned after the 3d day because of a growing physical hazard without control of withdrawal symptoms. His subsequent opiate requirement was promptly doubled.

Course in the Hospital.—The first night he received ½ gr. morphine and later secretively took an ampule of pantopon from his own supply which had not been taken from him. Insulin therapy on a 24-hour schedule was begun the next day with the onset of withdrawal symptoms. After the 4th day he only required insulin at night. This may have been due to the established pattern during addiction of taking the opiate at midnight and "relax" until 4 or 5 a.m. before falling asleep. At the end of 2 weeks he was able to sleep without any medications. His days were comfortable from the 3d day onward, spending his time in golf, movies and walks. He was in excellent spirits and in much better health when he left the hospital.

6(1657) and 7(1658). A dentist and his wife, age 35 and 29 respectively, admitted Dec. 28, 1941 and discharged Jan. 11, were addicted to dilaudid. She became addicted first. After a series of gynecological operations including a hysterectomy she developed menopausal symptoms and excruciating headaches. For a time she took codein, then dilaudid. By 1940 she was a confirmed addict. She was still able to change back and forth to codein, especially while taking large doses of hormone injections. Because of the strain of his wife's illness he had to take codein requently for insomnia. He said "we both took it because we understood it wasn't seriously habit forming." In the fall of 1941 he was in an automobile accident and sustained some painful injuries. He began to take dilaudid to ease pain while continuing to work. The excitement of the accident caused her an increased dependency on the opiate. They admitted that each was taking 1/20 gr. three times per day.

Course in the Hospital.—Insulin therapy was begun Dec. 29 and continued for 4 days. She had a severe attack of migraine the 2d night of treatment. This was completely relieved by a hypoglycemic reaction. Neither at any time required any other sedation. By the end of the first week their sleep and appetite were excellent. Their recovery seemed so complete by the end of the 2d week that they were conditionally allowed to leave the hospital. Either or both were to return at the slightest sign of distress.

8(1687). A married woman, age 32, a morphinist for two years, perhaps more, was admitted Jan. 31, 1942, and discharged Feb. 21. She was one of a large family born in Kentucky, married off at 15 and had her first child before she was 16. She left her husband and came to New York years ago; had worked as an actress, model, and currently was proprietress of a boarding house. Judged by her vernacular she must have had a colorful career. Her sister was an actress and an addict. Three or four years ago this sister gave her some heroin to relieve rheumatic pains. She was "cured" 6 months later and was well for 9 months. Then the physician who cured the addiction gave her codein tablets to treat a cold (*sic!*), reassuring her that it was not habit forming. The last two years she was a morphinist on a requirement of 2 grs. per day. She had two "cures" for this, but each time was sent home with a bottle of tonic containing codein. One such prescription, actually checked, contained 7 grs. codein and 4 grs. of phenobarbital to a 6-ounce mixture.

Course in the Hospital.—She was an extremely intolerant, uncooperative and vulgar person, entirely unreliable by word or promise. Three days of hypoglycemic therapy brought her to a comfortable status. Each day she wanted to bet the physician that he could not relieve this or that withdrawal symptom and each day she was humbly apologetic after the relief was produced. After the 3d day, except for brief periods of irritability, she had no end of praise for the treatment. During the second week she was treated again for two days because of some mild withdrawal symptoms. At no time did she receive any other form of sedative medication or hypnotic. Her main worry was too good an appetite for her desired slenderness. She was considered a psychopathic person with the addiction on a pleasure seeking basis.

Results of Treatment

All patients were managed by abrupt withdrawal of their opiate. Symptoms of withdrawal were effectively relieved without substitute opiates or supplementary sedatives, except in the extremely neurotic or psychopathic individuals who received small doses of barbiturates after the insulin treatments were discontinued. All regained their normal interests within a few days, most of them maintained a desire for food. The men who complained of impotency during addiction felt their sexual strength restored

during the second week; the women spoke of their heightened libido. Several complained of erotic dreams during the second week in the hospital. All were in excellent health and hopeful regarding the future when they left the hospital.

Later inquiry disclosed that cases 1 and 3 could not be located. Case 2 visited the hospital 5 months later. She had retained her physical improvement and was planning some work in national defence. She admitted she had "slipped" twice for one day each. Case 4 was reported suffering from headaches and gastric upsets two months after her release. Case 5 reported himself in excellent health two and a half months after his release. Cases 6 and 7 were both free of addiction, but she complained of a recurrence of her headaches and hot flushes. Case 8 disregarded the inquiry.

Discussion

The problem of opiate withdrawal presents several broad principles for consideration. The variety of symptoms, other than the text-book description of the syndrome which may complicate the treatment of withdrawal, run the gamut of every conceivable physical non-organic ailment the human body is capable of expressing; every form of conversion reaction known in psychiatry. Among the 15 patients treated by the author were encountered sinusitis, asthma, rheumatism, pain in the gall-bladder region, tabetic pains, neuralgia and migraine. These are medical conditions which severely test our first duty as physicians. The risk of addiction must constantly be borne in mind. Ultimately in the addict they serve as the moral justification for the addiction, and as the resistance, conscious and unconscious, to the establishment of abstinence. Successful therapy must demonstrate either the disappearance or the ability to control these ailments without a dependency upon the opiate. Failure to convince the patient that he or she has passed the time of honest need for the opiate means a bad prognosis regarding the addiction.

Addicts should be treated primarily as sick people who cannot recover until freed from their dependency upon the opiate. The existence of a physical dependency in many cases is no longer doubted. There have been numerous instances of addiction in infants of addicted mothers. Infants have died from obscure illnesses during their first days of life because mothers neglected to speak of their addiction to the attending physician. Yet, physical dependency may produce only moderate distress, and most intense suffering result or be due to emotional lability of the patient. The less suffering patient may be even more deserving of our best efforts and skill.

The degree or intensity of the addiction is not measurable in advance of treatment. The amount of the opiate used or the duration of the addiction are not reliable criteria for this purpose(3). Addicts who take opiates only for pleasurable experiences may not develop physiologic dependency even after long usage. These individuals are usually tainted with psychopathy. Their suffering during withdrawal is intense but of short duration. Some of them apparently do obtain physiologic dependency. This may be suspected or assumed when recovery is delayed by vague discomforts, unstable mood or insomnia. Biggam *et al.* point out that such residual symptoms are often the cause of relapses. Addiction is not merely a faulty habit; it is often a disease with profound physiologic implications.

Addicts who submit to treatment have many misgivings and much distrust, the result of past failures to provide adequate relief when most needed. The importance of providing tangible relief from the anxiety and feelings of imminent dissolution they experience is not to be underestimated. It is gratifying to see confidence and trust in the physician displace these manifestations. This trust and confidence is lastingly established if the first withdrawal symptoms are relieved, even though later the patient may experience some distress. To fumble with questionable palliatives as hypnotics, analgesics and sedatives is an admission of professional impotency. Insulin provides a dependable remedy, and promotes confidence in the physician; it affords a successful rapport with the patient.

The rationale of hypoglycemic therapy is supported by the present clinical knowledge about addiction and the uses of insulin. Anton and Jacobi(8, 9) began treatment of

addicts with insulin because they found hyperglycemia and disturbance in sugar tolerance during abstinence. Kolb and Himmelsbach(2) in a detailed study of 65 addicts found significant blood sugar elevations up to the 5th day of abstinence. They found an increased respiratory rate, blood pressure, basal metabolic rate and elevated temperature lasting beyond the 10th day. These latter are indicative of a hightened sympathetic activity. Nishigishi(10) in laboratory studies of withdrawal from morphine, opium and pantopon found a considerable increase in the basal metabolic rate, believed due to functional anomaly in the organs of internal secretion; an increase in lactic acid and acetone bodies in the blood he credited to hyperactivity of the thyroid gland. Ludlum and McDonald(11) in a study of the autonomic nervous system during morphine hunger observed an increased sympathetic tonus. They declared "the necessity of the morphine habitué may therefore be spoken of as an alteration of the vegetative nerve balance. . . . which morphine relieves by producing vagus stimulation." In the course of addiction sympathetic activity is depressed, with the abrupt withdrawal of the opiate there is a violent release of sympathetic activity, partly physiological and partly resulting from the emotional tension incident to undergoing withdrawal.

The action of insulin injected in to the body is not restricted to "the burning of carbohydrates." It may be that normal blood sugar and sugar metabolism are essential to physical and mental efficiency. Hypoglycemia affects the functional activity of the adrenals and of the autonomic nervous system, and probably most of the glands of internal secretions. The result usually is a better balanced physiologic functioning of the whole organism. Cowie *et al.*(12) long ago discovered that insulin given to diabetic children makes them more alert and more cheerful. Bennett and Miller(13) use insulin extensively as a sedative for excited psychotic patients, thus dispensing with much of the common sedatives and restraints in the disturbed wards of the hospital. Howard(14) developed a method of treating addicts with insulin when he observed that small doses administered as "a tonic" made them more comfortable and shortened their convalescense.

In the opinion of Ludlum and McDonald (11) "The hope of the treatment of the habitué must be in the correction of his physiologic or bodily unbalance, by means of such substances as will produce the vagus preponderance or correction of the sympathetic preponderance and not produce the anesthetic or pain relieving effects of morphine." Insulin therapy offers more toward the fulfilment of this dictum than any other form of treatment previously tried. Pain relieving drugs are not habit forming without a special diathesis in the individual. Addiction to opiates from therapeutic use occurs only in those who are constitutionally or psychically predisposed. Their focal distress is the *sub rosa* vindication for their disability, perhaps as the case of conversion hysteria justifies the invalidism. The addict sincerely believes the opiate is necessary to avoid suffering; not so, of course, addictions for pleasure or adventure. Evidence of the *sub rosa* vindication is seen in the recurrence of the focal complaint with the first signs of opiate hunger. The success of the treatment depends upon the resolution of this resistance either by control of the suffering without resorting to an opiate or by demonstrating that the original cause has weakened or no longer exists. The ordinary suffering of the addict during abstinence is not sensory but mental and emotional. Such sensory pain as some of them experience, like cramps and tenesmus, is a late secondary manifestation. Insulin is not an anesthetic or an analgesic. Its apparent analgesic action is probably due to an improved vascular and nervous function during hypoglycemia. The most frequently observed reaction to hypoglycemia is depression of sympathetic activity. Atypical reactions can often be converted to one of sympathetic depression by forcing fluids, by partial neutralization of the hypoglycemia with an intravenous injection of 3 to 5 grams of glucose, or by modifying the hypoglycemic reaction through an intravenous injection of the insulin. Insulin is not habit forming. It has been repeatedly demonstrated that resumption of the treatments after some days of interruption is strongly distasteful to the patient. This affords the treatment tremen-

dous advantages. With other forms of treatment it is often necessary for addicts to depend upon sedatives or hypnotics for a long time after their "cure," if they do not soon return to the addiction. With the unwilling victim the question of "to be or not to be" an addict may hang in the balance for a long time. The only determining factor regarding future addiction after insulin therapy is the personal integrity and mental normalcy of the individual. Addiction for pleasure is rarely curable by any short course of treatment, that is, short of a year or years of hospitalization.

Summary and Conclusions

This paper has presented additional experiences and discussion of the author's method of insulin therapy for the alleviation of suffering from opiate withdrawal. Fifteen patients have thus far been treated without failure to produce substantial freedom from distress. All patients accepted abrupt withdrawal although they were hospitalized on a voluntary status. Sedatives of any kind were unnecessary during the period of insulin treatments. Appetite, sleep and a sense of well-being were restored within a few days. This permitted an early return to normal activities, often at a higher level of efficiency than before treatment. Because abrupt withdrawal of the opiate was feasible the period of hospitalization was materially shorter than required by any other acceptable method of treatment. The rationale of the treatment is well supported by the present knowledge about addiction and hypoglycemic therapy.

BIBLIOGRAPHY

1. Terry, C. E., and Pellens, M. The opium problem. Committee on Drug Addiction and The Bureau of Social Hygiene, Inc., N. Y., 1928.

2. Kolb, L., and Himmelsbach, C. K. Clinical studies of drug addiction. Am. J. Psychiat., **94**: 759, Jan. 1938.

3. Biggam, A. G., Araf, M. A., and Ragab, A. F. Heroin addiction in Egypt. The Lancet, **1**: 922, Apr. 30, 1932.

4. Newman, M. K., and Berris, J. M. Artificial hibernation therapy. Arch. of Phys. Therapy, **22**: 161, Mar. 1941.

5. Avery, L. W., and Campbell, L. K. Shock therapy as an aid to the withdrawal of morphine in addiction. Dis. Nerv. System, **2**: 333, Oct. 1941.

6. Report of the Mayor's Committee on Drug Addiction. Am. J. Psychiat., **87**: 433, Nov. 1930.

7. Tillim, S. J. Induced hypoglycemia in the management of opiate withdrawal. Psychiat. Quart., **15**: 460, July 1941.

8. Anton, G., and Jacobi, J. Die Behandlung des Morphinismus durch Insulin und Traubenzucker. Klin. Wchnschr., **9**: 1547, Aug. 16, 1930.

9. Jacobi, J. Fortschritte bei der Behandlung des Morphinismus mit Insulin und Traubenzucker. Mntschr. f. Psychiat. u. Neur., **80**: 221, 1931.

10. Nishigishi, S. Studien über das Morphinismus. J. Orient. Med. **5**: 69, Dec. 1926.

11. Ludlum, S. D., and McDonald, E. Morphine hunger and the smooth muscle reaction. J. A. M. A., **86**: 835, Mar. 20, 1926.

12. Cowie, D. M., Parsons, J. P., and Raphael, T. Insulin and mental depressions. Arch. Neur. und Psychiat., **12**: 522, 1924.

13. Bennett, C. R., and Miller, T. R. An observation of the treatment of mental cases with subshock doses of insulin. Am. J. Psychiat., **96**: 961, Jan. 1940.

14. Howard, M. Q. Insulin as an aid in withdrawing morphine. Am. Therap. Soc., **33**: 103, 1934.

THE USE OF SHOCK THERAPY IN 305 MENTAL HOSPITALS [1]

LAWRENCE KOLB, M.D., AND VICTOR H. VOGEL, M.D.
Washington, D. C.

The Mental Hygiene Division of the United States Public Health Service, in conjunction with its consultation and survey service for state mental hospitals, frequently receives inquiries concerning the use of shock therapy in the treatment of patients with mental disease. We are asked how many hospitals are using shock therapy, whether its use is increasing or decreasing, and what the users think of its value. The literature does not answer these questions although there are many published reports of limited series of cases and the experience of single institutions.

The present study was not undertaken to determine conclusively the absolute and relative merits of the various forms of shock therapy nor to review the voluminous literature, a task which has been done very well recently.[2] It was undertaken to answer the question, "What hospitals are using shock therapy and what do they think of it?" Some of the carefully considered replies based on representative samples of cases are doubtless more valid than the aggregate opinion. Thus, while this paper is based on data from 305 mental institutions,[3] the weight of numbers does not necessarily indicate where the truth lies, and conclusions should be made or accepted with caution.

To secure the data upon which the study has been based, questionnaires were sent to all known state, federal, city and county mental hospitals, general hospital psychiatric wards, and to 99 selected private institutions. Eighty-six per cent of all hospitals receiving forms returned them in time for tabulation.

Table I shows the extent of response from the various classes of mental hospitals receiving questionnaires as well as the percentage of each class of responding mental

TABLE I

MENTAL HOSPITALS REPORTING THE USE OF SHOCK THERAPY, OCTOBER, 1941

Type of control	Hospitals: Receiving questionnaire, No.	Responding [1] No.	Responding [1] Per cent	Using shock therapy No.	Using shock therapy Per cent
State hospitals	183	160	87.4	150	93.8
Federal hospitals [2]	34	34	100.0	27	79.4
City and county hospitals [3]	26	21	80.8	14	66.7
Private hospitals	99	77	77.8	57	74.0
Psychiatric wards in selected general hospitals	14	13	92.9	12	92.3
Total	356	305	85.7	260	85.2

[1] Additional late replies from five state hospitals, two county hospitals, one private hospital, and two psychiatric wards in selected general hospitals were received; they have not been included in any of the tabulations.

[2] Includes 30 veterans administration facilities; St. Elizabeths Hospital, Washington, D. C.; Medical Center for Federal Prisoners, Springfield, Missouri; psychiatric wards in Walter Reed General Hospital, Washington, D. C. and U. S. Marine Hospital, Ellis Island, New York.

[3] Includes 5 hospitals in Pennsylvania which have been reclassified as state hospitals; since the data for the majority of these institutions responding are for a period prior to their reclassification, they have been included in county institutions.

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

Appreciation is extended to the hospital administrators who returned the questionnaire upon which this study is based.

From the Division of Mental Hygiene, United States Public Health Service.

[2] Jessner and Ryan: Shock Therapy in Psychiatry. Grune and Stratton, New York, 1941.

[3] Ten additional late replies are not included in the tabulations.

hospitals which have used or are continuing to use some kind of shock therapy. Eighty-five per cent of all responding institutions have used some form of shock therapy. The state hospitals with 94 per cent lead the list; the city and county hospitals have the lowest figure of 67 per cent. This confirms the belief that shock therapy has aroused wide interest and at least clinical trial.

The questionnaire elicited a wide range of opinions concerning the general value of shock therapy. Some typical comments were:

I would like to see further and more extensive use of shock therapy throughout the United States.

Frankly, I feel shock treatment will go the way of many other vaunted cures.

I do not believe shock therapy offers us any lasting benefit. It certainly is not a specific. It does not in any way help the patient to understand his own problems or to change his attitude towards his problems. It certainly in no way assists the psychiatrist in understanding the patient, his problems or his makeup. From the cases I have seen treated by shock therapy, I believe better results could have been obtained by devoting the time and energy towards a more constructive program. To put it bluntly, I do not believe that we can scramble brains and expect to have anything left but scrambled brains.

We have been having quite a lot of discussion since the receipt of your inquiry concerning shock treatment, and I have delayed my answers in order to get the staff to formulate the experience here. I must admit, however, that these discussions do not get very far. Most of the staff have been favorably impressed by the promptness of improvement after shock. I am probably the most skeptical here regarding the value of the treatments. Our cases show a considerable tendency to lose their improvement. Furthermore, in the cases I have seen (here and elsewhere) where shock did not bring improvement, I have been strongly impressed by the hindrance to psychotherapy. In spite of protestations to the contrary, the staff does not continue psychotherapeutic efforts with the same alertness and zeal on a patient who is under shock treatment.

I realize that there are authorities who speak very highly of the shock treatments. But there are some of us who see the end results of the treatment, particularly in that group of cases which travels from sanitarium to sanitarium. Frequently the treatment has been given by one sanitarium; the patient improves for a short while, is released, and then lands in another sanitarium. The first sanitarium reports satisfactory results. Statistics will be difficult to collect, especially with the group of depressions which improve for a short period and then swing into a manic phase. There are many things that I could say against this treatment, but since I cannot say anything for it, despite some people's enthusiasm for the electric shock treatment, I shall close by saying that this sanitarium does not give the shock treatment.

All methods of shock therapy are extremely valuable.

None will be used until proven safe and effective.

In general the danger of damage outweighs the benefits if any. Small private hospitals cannot afford to take chances until such treatment has proved reliable, which so far it has not.

Table II shows the number of patients in all mental hospitals who received shock therapy between 1935 and October, 1941. According to this tabulation a total of 68,688 patients received such therapy. It it possible, however, that this represents an incomplete enumeration and that probably more than 75,000 patients have received some form of shock therapy. Since insulin, metrazol and electric shock have been used for varying lengths of time in the responding hospitals, it is necessary to pro-rate the number of patients receiving such treatment to the total number of hospital patients under treatment during the period that shock therapy was in use in order to obtain a rough estimate of the proportion of all mental hospital patients who received this form of treatment. This is done as described in the footnote to Table II. The results show that 1.45 per cent of patients under treatment during any one year received insulin shock therapy, 2.28 per cent received metrazol shock therapy and 2.33 per cent received electric shock therapy. The highest proportion of patients who have received the various types of shock therapy was to be found in private hospitals. As might be expected, patients treated in psychiatric wards in selected general hospitals were least subjected to any form of shock therapy.

The trend in the use of shock therapy is shown in Fig. 1. Insulin shock was introduced in 1935, followed by metrazol a year later. After a lag of about a year both were taken up with considerable enthusiasm. Insulin reached its peak in 1938 when its use was reported by 54 per cent of responding mental institutions; metrazol reached a peak in 1939, when 65 per cent of responding mental hospitals reported its use. Since these peaks, however, the rate of decline for metra-

zol has been greater than for insulin; if these trends continue metrazol will become less popular than insulin sometime during 1942. Electric shock therapy first came into appreciable use in 1939 and was adopted more rapidly than either insulin or metrazol. It was being used by 42 per cent of mental institutions during October, 1941, when its use was still increasing with no evidence of diminishing interest except in two hospitals where it was discontinued upon the basis of doubtful or inadequate results.

Fig. 2 throws additional light on changes in the use of shock therapy by showing the trends within hospitals which have used shock therapy. In general these data support the trends shown in Fig. 1. A few more hospitals report an increasing use of metrazol than of insulin, while an increasing use of electric shock is reported in many more institutions than report increased use either of metrazol or insulin. The use of metrazol was also decreasing in slightly more hospitals than was insulin, while the use of electric shock was decreasing very little within the institutions using it. Fig. 2 also shows the proportion of hospitals which discontinued the use of each type of shock therapy; insulin was discontinued by 34 per cent, metrazol by 33 per cent, and electric shock by less than 1 per cent.

Most hospitals reporting decreased or discontinued use of any one type of shock therapy usually indicate that it is being or was replaced by another type of shock therapy. The tendency has been to discard the old for the new with many institutions going progressively from insulin to metrazol to electric shock. Of the institutions reporting decreased or discontinued use of insulin 23 indicated that it was being replaced by metrazol, 27 by electric shock, 18 by both metrazol and electric shock, and 4 by typhoid or combinations of insulin-metrazol or metrazol with curare. Of the institutions reporting decreased or discontinued use of metrazol 88 indicated that it was being replaced by electric shock, 4 by insulin and 1 by insulin-metrazol. Of the institutions reporting decreased or discontinued use of electric shock, 2 indicated that it was being replaced by metrazol while 1 indicated that it was being replaced by camphor, petrotoxin and metrazol.

Personnel and financial considerations rather than merit alone sometimes determined the discontinuance or decreasing use of one or all types of shock therapy. This is shown by such typical statements as the following:

> Our nursing personnel is inadequate to undertake any form of shock therapy which would require considerable nursing care.
>
> It has been necessary for us to adopt the method which requires the least help from the nursing staff, namely electric shock therapy.
>
> For institutional work in which the funds would be available I would prefer insulin treatment to any one of the three.

TABLE II

THE EXTENT TO WHICH SHOCK THERAPY HAS BEEN USED FOR ALL PATIENTS UNDER TREATMENT IN MENTAL HOSPITALS [1]

	Total patients receiving shock therapy — Years therapy has been used			Average annual percentage of all hospital patients under treatment [2]		
	1935-41 Insulin	1936-41 Metrazol	1940-41 Electric	Insulin	Metrazol	Electric
State hospitals	18,479	29,497	5,590	1.12	1.98	1.96
Federal hospitals	912	341	26	1.15	1.29	1.58
City and county hospitals	1,059	1,979	467	3.06	4.72	4.21
Private hospitals	2,556	4,232	1,186	6.27	9.48	11.76
Psychiatric wards in selected general hospitals	645	790	500	0.26	0.39	0.79
Total	23,651	36,839	7,769	1.45	2.28	2.33

[1] Omitted from table are 429 cases who received combined insulin-metrazol shock therapy in state, federal, or private mental hospitals.

[2] This index is derived by first computing the average number of patients receiving each type of shock therapy per hospital year of treatment and then standardizing the resulting figures for each 100 patients annually under treatment in the average hospital for each class.

Ours is a private hospital catering to a middle economic class of people and I believe insulin shock would be used more frequently were the question of expense not such a problem. Consequently we are using electric shock and metrazol in preference.

Insulin shock therapy was discontinued because not very encouraging results were obtained considering the expense and also because of a personnel shortage due to the defense emergency.

In spite of evidence that the use of insulin and metrazol is declining rapidly, 66 per cent of hospital administrators believe that insulin shock is a valuable form of therapy, 78 per cent believe that metrazol is valuable, while 77 per cent believe that electric shock is of value. These data are shown in Fig. 3 and the percentages are based only on the opinions from hospitals which were using the type of therapy which they professed to prefer. It is interesting to note the small proportion of hospitals which considers shock therapy of no value.

Replies to the question, "If only one form of shock therapy were available to you which would you use?" are tabulated in Table III. Since many hospitals expressed a preference for some form of shock therapy even though they had not used it, the responses are broken down according to the kinds of therapy which had been used. Of 111 institutions which had used all three forms of shock therapy, almost 60 per cent preferred electric shock, 8 per cent metrazol, 13 per cent insulin, 7 per cent some combination, and 13 per cent were undecided or did not state. Some typical reasons given for preferences were:

The reason I select electric shock therapy is because if it were the only therapy available it would be the easiest and the least expensive for the type of hospital we have. However, I feel that there are now definite indications for the use of insulin, metrazol or electric shock in various types of psychotic patients. I feel that insulin is of definite avail in certain forms of dementia præcox

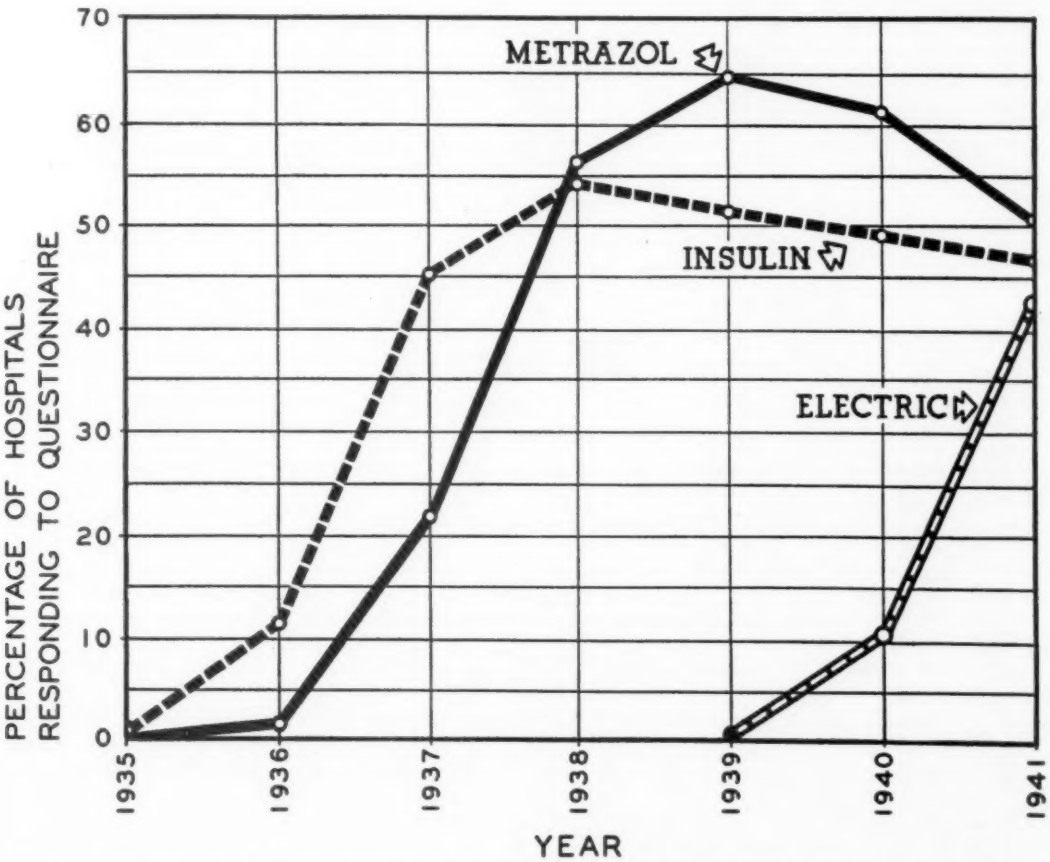


FIG. 1.—Percentage of all mental hospitals using insulin, metrazol and electric shock therapy at the end of each year, 1935-1941, inclusive.

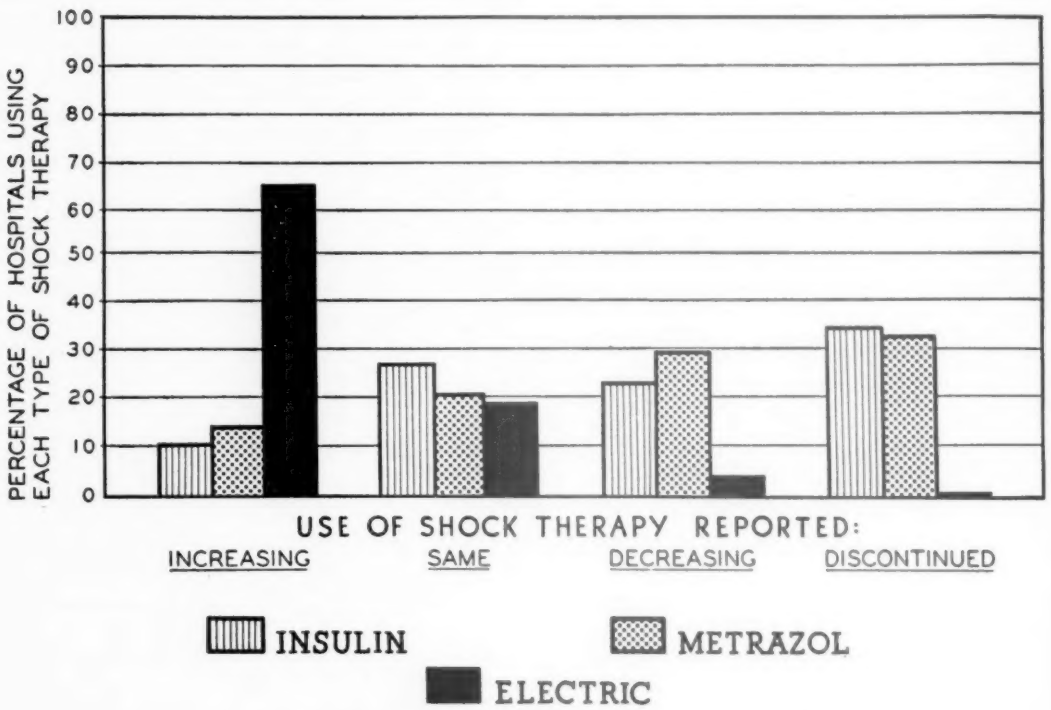


FIG. 2.—Trend in the use of shock therapy in mental hospitals.

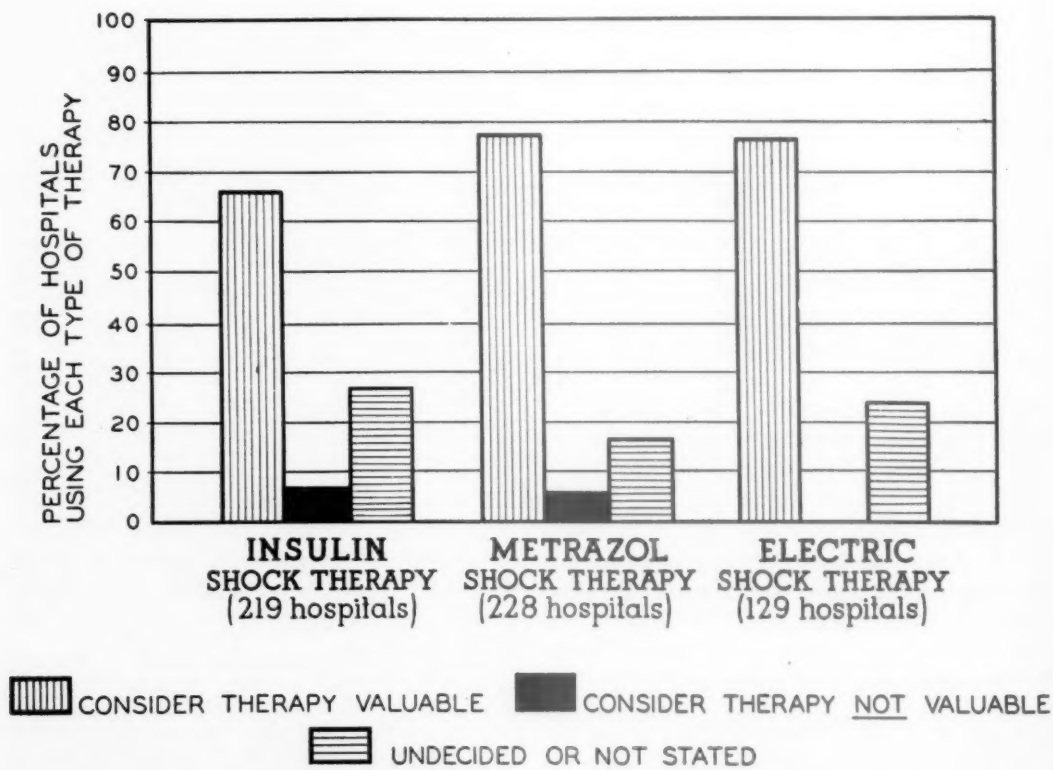


FIG. 3.—Opinions concerning the value of shock therapy.

where electric shock is of no avail. I feel that the depressive syndromes and the maniacal syndromes are best treated with electric shock or metrazol shock therapy. In the well advanced cases of paranoia no therapy is of any avail.

I like electric shock best because it produces a complete amnesia from the start; it does not produce the fear that metrazol does and the results are the same as to cure.

We have pioneered metrazol in the United States and extended its scope to other disorders than schizophrenia. Our results have been most gratifying and free of the ill effects claimed by others. We are of the opinion all ill effects can be eliminated by the employment of a proper technique in approaching the patient and the administration of metrazol.

If only one form of shock therapy were available to us for use in schizophrenia, we would prefer to use insulin.

Metrazol and insulin were most frequently used together. Two interesting comments on combinations follow:

We place great stress on a combination of insulin and metrazol and now on insulin and electric. We have tried, also, a series of different types of shock in rapid succession. In 1937 we stopped using metrazol alone and only used it in combination with insulin; by this technique of giving it to a relaxed stuporous patient we decreased our injuries to a marked degree.

Metrazol, when used in selected cases to induce convulsions during the insulin treatment, can often make the difference between success and failure, when either metrazol or insulin alone is unsuccessful.

Fig. 4 shows the psychiatric conditions for which the three types of shock therapy are indicated according to the respondents. Of the hospitals reporting the use of insulin 96 per cent had used it for some form of dementia præcox while 25 per cent had used it for some form of the manic-depressive psychoses. Hospitals using metrazol also used it more frequently for dementia præcox (81 per cent) than for manic-depressive psychoses (73 per cent), but the users of electric shock listed manic-depressive psychoses as an indication (86 per cent) ahead of dementia præcox (79 per cent). Many more of the institutions listed involutional melancholia as an indication for metrazol (67 per cent) and electric shock (73 per cent) than for insulin (14 per cent). The psychoneuroses were considered suitable for treatments in 15 per cent of the institutions using metrazol and electric shock and in 10 per cent of

TABLE III

TYPE OF SHOCK THERAPY PREFERRED [1]

Preferences expressed by hospitals using	Number of hospitals reporting	Shock therapy preferred: Insulin No.	Insulin Per cent	Metrazol No.	Metrazol Per cent	Electric No.	Electric Per cent	Combinations No.	Combinations Per cent	Undecided and not stated No.	Undecided and not stated Per cent
Insulin, metrazol and electric	111	14	12.6	9	8.1	66	59.5	8	7.2	14	12.6
Insulin and metrazol	78	26	33.3	20	25.6	6	7.7	6	7.7	20	25.6
Metrazol only	30	..	...	11	36.7	6	20.0	3	10.0	10	33.3
Insulin only	21	8	38.1	..	...	2	9.5	..	..	11	52.4
Metrazol and electric	9	..	...	1	[2]	6	[2]	..	..	2	[2]
Electric only	3	..	...	..	...	2	[2]	..	..	1	[2]
Miscellaneous	8	5	[2]	..	...	2	[2]	1	[2]	..	...
None	45	2	4.4	..	...	4	8.9	..	..	39	86.7
Total	305	55	18.0	41	13.4	94	30.7	18	5.9	97	32.0

[1] Replies to question "If only one form of shock therapy were available, which would you use?"
[2] Less than ten cases in denominator.

The results obtained with electric shock are comparable with those obtained when metrazol therapy is used. However, electric shock is preferable for the following reasons: (1) More economical; (2) Technique of treatment simpler; (3) Useful in patients whose physical condition contraindicates metrazol therapy; (4) Fewer complications, especially compression fracture of the vertebrae; (5) Amnesia for the treatment.

The use of metrazol by the medical staff of this hospital has apparently given better results than any other form of shock therapy used, although if cost were not considered, I believe that we would undoubtedly be using insulin as much as metrazol.

Electric shock is preferred because of: (1) Less danger to patient; (2) Results slightly more effective than metrazol; (3) Less apprehension; (4) Can be used when condition is complicated by organic factors.

Eighteen institutions preferred some combination of the three types of shock therapy.

those using insulin. Some comments on various conditions suitable for treatment are as follows:

Insulin, it seems to us, is far more valuable in cases of schizophrenia where we have seen excellent and lasting results. Metrazol did not give good results in schizophrenics. On the other hand, involutional psychoses and manic-depressive insanity have a comparatively good prognosis anyhow. In cases of depressions of manic-depressive insanity we saw a number of failures with metrazol; after a temporary improvement the patient slipped back or changed his symptoms from depressed features to hypochondriacal ones.

Our preference is electric shock for the manic-depressive and involutional group, insulin for schizophrenia.

Metrazol was a valuable form of treatment, but it does nothing that electric shock cannot do less expensively, more safely, more pleasantly and all around in superior fashion. Metrazol shock was indicated in the involutional melancholias and in depressive states. I do not believe it had value in other conditions. Electric shock is of value in the involutional melancholias, in the depressive states, whether of manic-depressive or other unclassified type, and in what I have called the anhedonic unreality syndrome. Electric shock treatment is limited in its value. It has no place in the treatment of neuroses. It can be used experimentally in the earlier phases of what is diagnosed as schizophrenia, fully realizing that the percentage of error under such circumstances is great and that there is a spontaneous remission and recovery rate as well. Its use in chronic schizophrenia seems to me to have little or no value. In the obsessive-compulsive states it has not given me any noteworthy results. On the other hand in the involutional melancholias, in the depressive states of whatever type it brings immediate amelioration to practically all cases, and recovery to some, though an uncertain proportion slip back later. The improvement cannot be accidental since practically every case shows at least marked temporary improvement.

Convulsive shock (metrazol or electric) is more effective in affective disorders; insulin shock is best in schizophrenia. However, with any shock treatment improvement in schizophrenia is only temporary, as essential schizophrenic patterns remain unchanged. Results obtained in affective disorders are more gratifying.

It is interesting to note that 6 per cent of the institutions using insulin considered it useful in the treatment of various forms of chronic alcoholism, although little concerning such use has appeared in the literature. From the questionnaire responses it appears that shock therapy is used more in treating the manic state of the manic-depressive psychoses than one would judge from a cursory reading of the literature. Several rather unusual uses were recorded. For instance, a young malingerer who was a car thief, "recovered" his memory after one metrazol injection.

Some hospitals said they did not recommend shock therapy, but gave it occasionally upon request of patient's relatives.

Reported specific diagnostic indications in descending order of frequency are: For insulin—catatonic dementia præcox, paranoid dementia præcox, hebephrenic dementia præcox, involutional melancholia, depressed states of manic-depressive psychoses, manic states of manic-depressive psychoses, psychoneuroses, simple dementia præcox, and alcoholism.

For metrazol—involutional melancholia, catatonic dementia præcox, depressed states of manic-depressive psychoses, other depressions, manic states of manic-depressive psychoses, psychoneuroses, paranoid dementia præcox, and hebephrenic dementia præcox.

For electric shock—involutional melancholia, depressed states of manic-depressive psychoses, catatonic dementia præcox, manic states of manic-depressive psychoses, other depressions, psychoneuroses, paranoid dementia præcox, and hebephrenic dementia præcox.

Many respondents mentioned limitations on the value of shock therapy and particularly the necessity of combining psychotherapy with it. Typical statements follow:

Except for a few cases in whom several shock treatments facilitate a subsequent psychotherapeutic approach, I do not feel that shock treatment can justify its use. It is very often a short cut for the more laborious, but more productive attempt at reorientation and exploration of the psychodynamic problems involved.

The cases treated with shock without intensive psychotherapy have not persisted well. Metrazol has not seemed to offer the opportunity for the same type of psychotherapy, therefore, I prefer insulin, despite its length and expense.

We feel that, in general, electric shock and metrazol treatments bring the patient to a state in which a better rapport can be established and thus psychotherapy used more effectively.

The pharmacological shock treatment methods are used here only as adjuncts in a total psychotherapeutic approach, including psychotherapeutic interviews with physicians, and a program of physical education, occupational therapy, hydrotherapy, physiotherapy, and a program to promote socialization.

We use it when we think it is indicated and use it to do a certain thing; that is, not to cure a manic, but to keep a manic from exhausting himself; not to cure a simple depression, but to make a depressed case that is not eating, eat. It is a therapeutic measure, which should be used for what it offers. Considering the prognosis of the cases thus far treated our results have been what we expected in 83 per cent of the cases.

Figs. 5, 6, and 7 show the complications reported for each type of shock therapy. The classification was not predetermined, but was made up from the replies received. This is why convulsions are shown as a complication of insulin therapy; only a few hospitals regarded it as such, hence the low reported rate. The most frequent complication of insulin therapy was prolonged coma with a rate of 8.5 per 1,000 cases treated, about 3½ times more than pneumonia and pulmonary conditions, the next most frequent complication. In metrazol therapy, fractures and dislocations with a rate of 39 per 1,000 are by far the outstanding complication, being 34 times as frequent as tuberculosis activation which is the only other complication with a rate greater than 1 per 1,000. This shows that efforts to prevent fractures and dislocations particularly in metrazol therapy are well directed. The fracture and dislocation rate in electric shock is 9 per 1,000 with no other complication exceeding 0.6 per 1,000. However, at least some of the cases listed as "sore back" were probably fractures. Comments relating to complications are as follows:

We had a metrazol fracture rate of 6 per cent without curare. We have been using curare (intocostrin Squibb) routinely for the past year and have had no fractures.

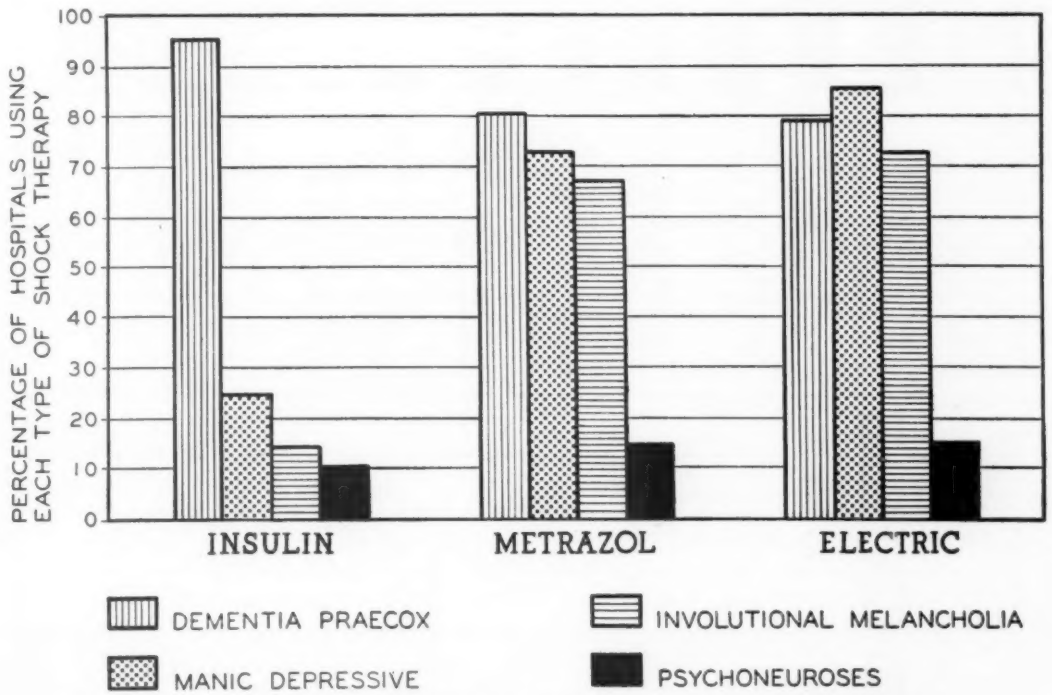


FIG. 4.—Classes of mental disorder for which shock therapy is considered indicated.

We have had no fractures in the past year since the use of curare.

Our treatment with curare and metrazol has been so satisfactory in selected cases that we have so far not availed ourselves of electric shock equipment.

We feel quite differently about metrazol shock therapy since using intocostrin. We have had no complications and can give it to persons with cardiovascular disease and some other diseases which would otherwise contraindicate its use with safety.

Total complication rates are shown in Fig. 8 together with death rates. Twenty per 1,000 (2 per cent) of all the insulin cases had complications recorded; 43 per 1,000 (4.3 per cent) of all metrazol cases had complications recorded; 11 per 1,000

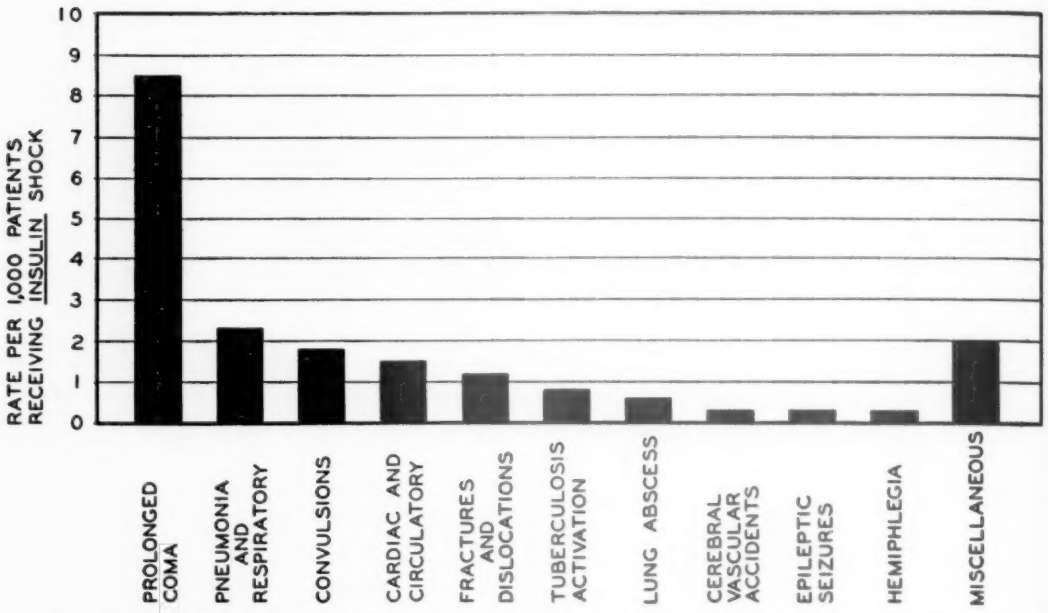


FIG. 5.—Complications reported for mental hospital patients receiving insulin shock therapy.

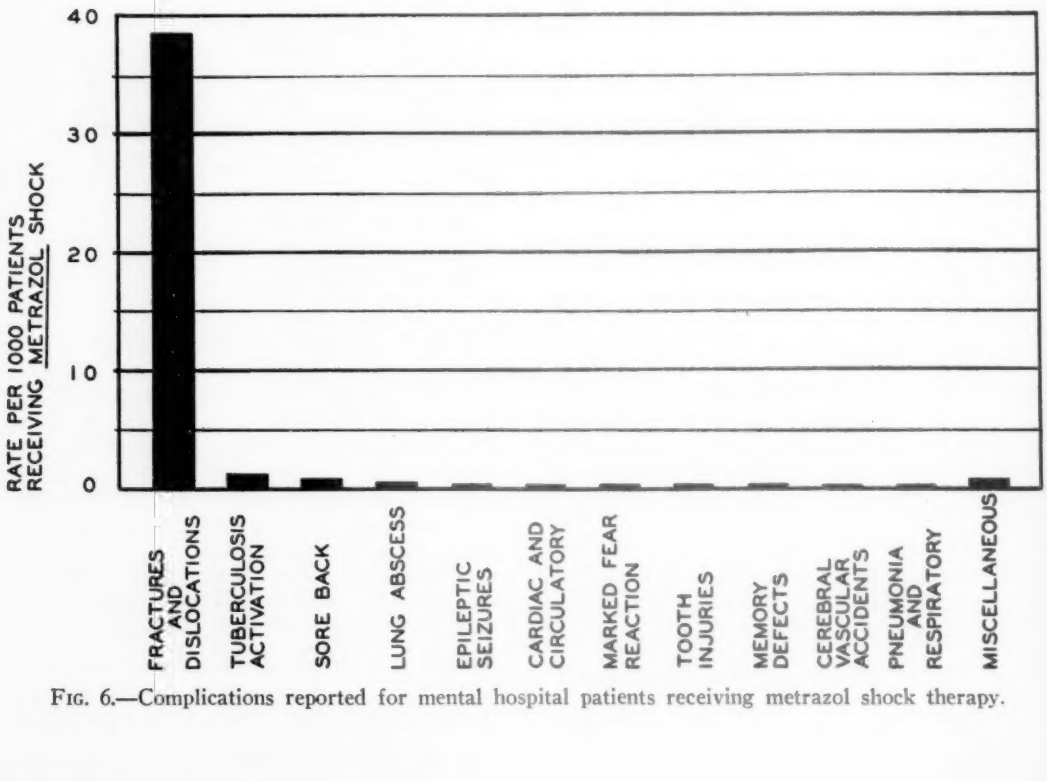


FIG. 6.—Complications reported for mental hospital patients receiving metrazol shock therapy.

(1.1 per cent) of those receiving electric shock suffered complications. Although metrazol therapy is more often attended by complications than insulin or electric shock, these apparently are not as serious as those found with insulin or electric shock. With insulin the death rate is 6 per 1,000 compared to 1 per 1,000 for metrazol; with only 4 deaths attributed to electric shock therapy in 7,207 cases, the death rate is 0.5 per 1,000. Complication and death rates are substantially higher in public hospitals than in private institutions except for deaths due to electric shock, and here the number of deaths is too small to obtain reliable rates. In insulin therapy the deaths in public hospitals are 2½ times as great as in the private institutions.

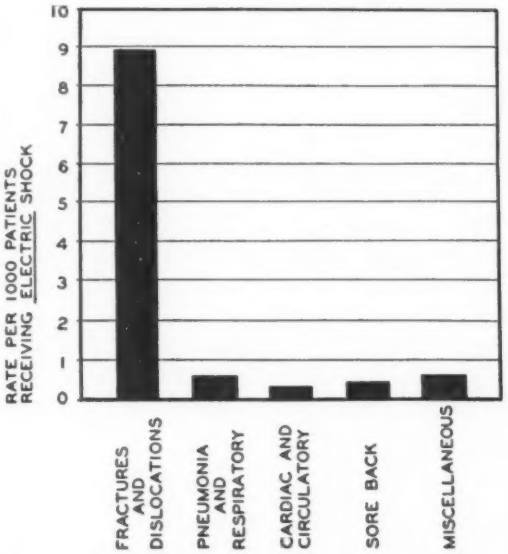


FIG. 7.—Complications reported for mental hospital patients receiving electric shock therapy.

Assuming that complications and deaths are as faithfully reported by one group of institutions as the other there are several possible explanations for this seemingly greater hazard attending the use of shock therapy in public hospitals. Many of them are greatly understaffed as regards physicians and nursing attendants so that patients may receive less than optimum care during the periods of special therapy. Lack of adequate medical staff may result in inadequate preliminary search for contraindications to shock therapy. Cases admitted to the private institutions may be better risks because of better physical condition and better nutrition

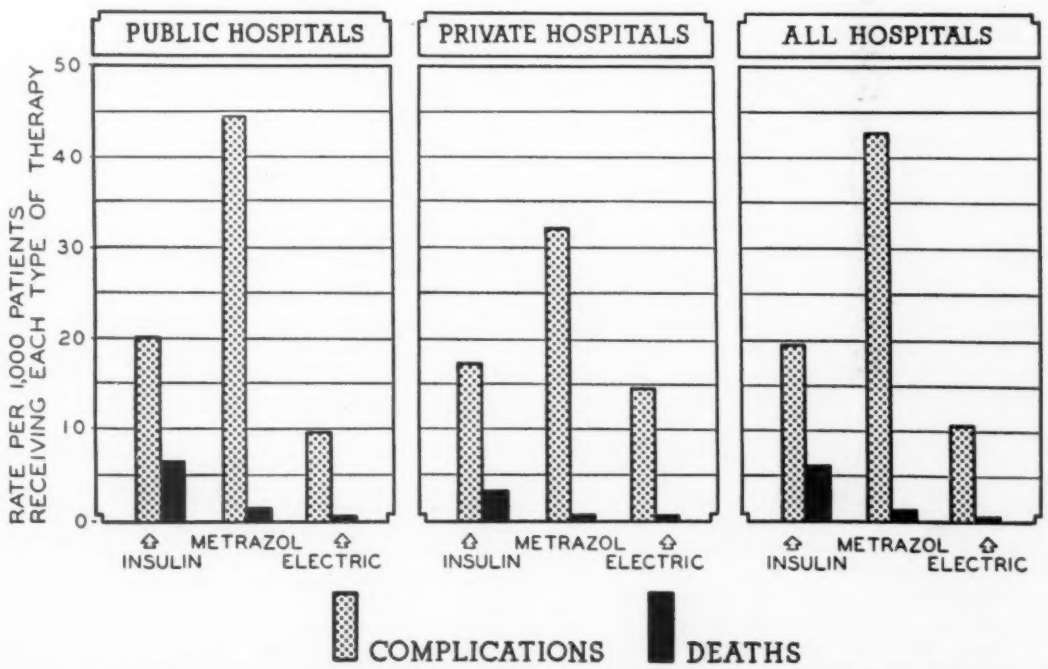


FIG. 8.—Complication and death rates for patients receiving shock therapy in public and private hospitals.

with fewer secondary diseases. The ratio of deaths to complications is also greater in public hospitals; this confirms the fact that shock therapy in public hospitals is more hazardous than in private institutions, but does not help to explain why it is so.

In conclusion, it is evident from the data presented in this paper that shock therapy has been widely adopted in mental hospitals and is receiving an extensive clinical trial. The tendency has been to drop the older in favor of the newer forms, but the reasons for change have not always been based on scientific merit. Shock therapy is widely regarded as a promising therapeutic measure, but there is a healthy skepticism that insures careful study of the numerous problems raised by it. This is the essence of progress.

PRESENILE PSYCHOSIS OF THE JAKOB TYPE[1]

Clinico-Pathologic Study of One Case with a Review of the Literature

GEORGE A. JERVIS, M.D.
Thiells, N. Y.

AND

HERMAN M. HURDUM, M.D., AND FRANCIS J. O'NEILL, M.D.
Binghamton, N. Y.

The group of primary presenile psychoses includes two well-established clinico-pathologic types, associated with the names of Alzheimer and Pick, and a certain number of cases whose classification is still uncertain. Among these last, a type has been singled out under various names: presenile dementia of the Jakob type; "spastic pseudosclerosis"; cortico-striato-spinal degeneration; Creutzfeld-Jakob disease. The patients show clinical signs of motor impairment both pyramidal and extra-pyramidal in nature, associated with rapidly progressive dementia. Pathologically, diffuse degenerative lesions are found involving cerebral cortex, basal ganglia and spinal cord.

Published records of patients, presumably belonging to this group are scanty, and variations of both clinical and pathological features have been observed from case to case. Moreover, little is known concerning the etiologic factors responsible for the disease. Consequently reasonable doubts have been expressed as to whether one is dealing with a clinico-pathologic entity. Reports of new cases therefore appear justified. It is the purpose of this paper to report on the clinical and pathologic findings of a patient who can be classified in the type described by Jakob. A brief review of similar cases reported in the literature will be given, and some aspects of the disease will be discussed.

Case Report

The patient, C. W. D., a white male aged 43 was admitted to Binghamton State Hospital January 18, 1941. The father was living and well; the mother died of tuberculosis when the patient was 2 years of age. There was only one sib and he had died in early infancy. A paternal uncle was admitted to Binghamton State Hospital when 47 years of age. He showed paranoid trends and marked depression with agitation. The content of the psychosis showed little change over a period of 20 years. No neurological symptoms were noted on any occasion. No information about other relatives was available.

The personal history of the patient prior to the onset of the psychosis showed nothing of significance: he had pneumonia in 1917, and acute appendicitis in 1935. In his personality make-up he was considered normal; he was agreeable, cheerful, a good worker and a good provider. He completed grammar school at 13 years of age, then worked on farms and for the past 16 years had been a railroad employee. He married at 30 and had five healthy children. There was no history of alcohol or drug addiction.

The first symptoms of the disease were noted by the informant, the patient's wife, in the summer of 1940. These consisted of memory impairment and episodes of mild confusion; the patient, for instance, would often get up 4-5 hours before the normal time and, without looking at the clock, would dress, eat his breakfast and get ready for work; he would make some purchases and forget his change; he was at times unable to recall people he had known for many years, at other times he was not correctly oriented and often had to consult the calendar. About the same time, the informant noticed a gradually increasing wasting of the muscles of the upper arms and chest and continuous twitchings of the atrophic muscles. In October, 1940, he ceased his work and following a period of rest and vitamin therapy he seemed to improve to some extent with regard to his ability to concentrate and recall. However, during the latter months of 1940, he showed poor judgment in some business transactions, became restless, aimlessly over active and more forgetful. He was committed on voluntary application.

On admission he was quiet, apathetic, mildly euphoric and definitely circumstantial. He constantly was reminiscing about his work in the past two years. He showed mental fatigue and impairment of retention and recall. No particular trend was elicited; paucity of thought and inability to concentrate and elaborate were the outstanding features of his mental picture. He was only approximately oriented for time but correctly oriented

[1] From the research department of Letchworth Village (Thiells, N. Y.), and The Binghamton (N. Y.) State Hospital.

as to place. His remote memory showed gross discrepancy, particularly as to dates; there also were noticeable errors and omissions in his memory of previous hours or of the previous few days. On specific retention tests he was unable to recall part of an address given him and within five minutes he retained only the name of the city and state. His digit span was 5 and he retained only 2 out of 10 word pairs. Although he would occasionally admit memory loss when some specific failure was pointed out to him, he was usually inclined to minimize these symptoms. He showed, in general, very little insight.

On neurological examination there was very marked atrophy of the muscles of the arms, shoulders and upper back (Fig. 1). Particularly involved were the deltoideus, brachialis, biceps, triceps, supra spinatus, infra spinatus, rhomboideus and trapezius. In all these muscles there were continuous fibrillary twitchings. These could also be noted in other muscles of the trunk and in the muscles of the thighs. There was definite motor weakness in the upper extremities. The gait was unsteady. Of the deep reflexes, the biceps were hyperactive, the triceps were not elicited, the left knee jerk and the left ankle jerk were absent, the right ones were normal. No sensory changes were present. There was definite anisocoria and the right pupil, the smaller, was slightly irregular and reacted sluggishly to light. The fundi were normal. There was a moderate slurring of speech.

Examination of the spinal fluid on admission and repeated on three different occasions gave constantly negative results as far as Wassermann reaction, number of cells, proteins and colloidal reactions are concerned.

General physical examination was essentially negative. Blood pressure was 120/80. Blood counts, nitrogen and sugar determination in the blood gave normal figures. Repeated urine analyses were negative.

Course.—The patient was placed on treatment consisting of rest, high-vitamin and high caloric diet. On February 6, 1941, he was started on ephynal acetate (daily dose 250 mg.). Six weeks later he appeared to show some improvement mentally; he was more alert, less circumstantial and better oriented. He seemed also to be able to use his arms less clumsily. On May 16, the dosage of ephynal was increased to 1000 mg. a day and additional doses of vitamines A B G D were given. The neurologic manifestations, however, became more pronounced. During June there was a gradual decrease in the strength of the arms so that only with considerable difficulty was he able to lift a glass of water to his lips. The paralysis of the arms was almost complete in August. In July, he began to show noticeable fatigue in walking and had to be assisted in climbing the stairs. The mental state also became progressively worse; poor memory and lack of concentration were more and more in evidence. Extensive perseveration was noted in his attempts to write letters or answering questions. Orientation as to time was faulty. A gradual increase of irritability and childishness was noted. Speech defect was marked. In August, he became idle, listless and apathetic. There was considerable intellectual deterioration. Vitamin E treatment was discontinued on August 20. In September, both mental and neurologic manifestations became worse: a gradual waste and motor impairment of the legs was noted. Slurring of speech and swallowing difficulties increased. On September 15, he expired suddenly, about one year after the onset of the first manifestations.

Post mortem examination was performed 5 hours after death. There was pronounced atrophy involving the muscles of both upper extremities, shoulder girdle and hands. Slight atrophy of the muscles of the lower extremities was present, especially on the right side. There was nothing of significance on gross inspection of the viscera.

The brain weighed 1324 gm. On external examination, the convolutions of the frontal lobes appeared slightly smaller bilaterally and the sulci wider than normal. Especially involved were the fronto-polar region. Some gross atrophy was observed also in the temporal region. The parietal and occipital convolutions were normal. The pia was everywhere normal and no adhesions were present.

Histological examination included Nissl and Bielschowsky stain for nerve cells; Spielmeyer, Weigert and Weil for myelin sheaths, Herxheimer for fatty substances; Holzer, Cajal and Hortega for the various types of glia; Braunmühl for senile plaques; H and E, Mallory and van Giesen for blood vessels and connective.

Cerebral Cortex.—Low power examination of the atrophic areas of the frontal and temporal regions, as seen in the Nissl preparations, showed a considerable thinning of the whole cortex. The demarcation between gray and white matter was sharp. There was "dropping out" of a certain number of neurons varying in severity from layer to layer. The most involved layers appeared to be the third, fifth and sixth but regions were found in which the three superficial layers were severely involved while the deep ones were well preserved. More rarely the latter were more damaged than the former. Occasionally ill-defined circumscribed areas in which numerous nerve cells were absent could be observed to extend to several laminæ. Considerable variations were also observed from one region to another, and even in adjacent microscopic fields. In general, however, these alterations were not severe and the characteristic lamination of the cortex could still be recognized.

With high power examination, a large number of nerve cells appeared altered. A common lesion consisted of shrinkage of the cellular body, hyperchromatic cytoplasm and distortion of dendrites with varying alteration of the nucleus. Another lesion was that of a foamy aspect of the cytoplasm and presence of large amounts of fat; there were areas in which this alteration involved the large majority of the neuron cells and fat was also found within the cytoplasm of neuroglia cells. This fatty material stained red with scarlet R and sudan III, black with osmic acid and sudan black. It was only

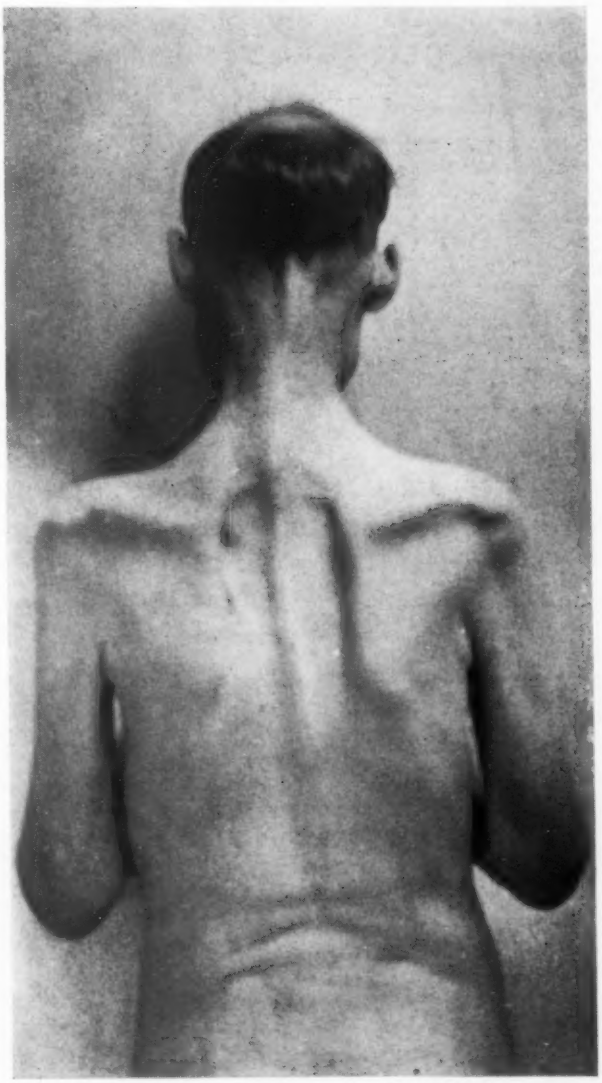


FIG. 1.—Showing marked atrophy of the muscles of the arm, shoulder, and back.

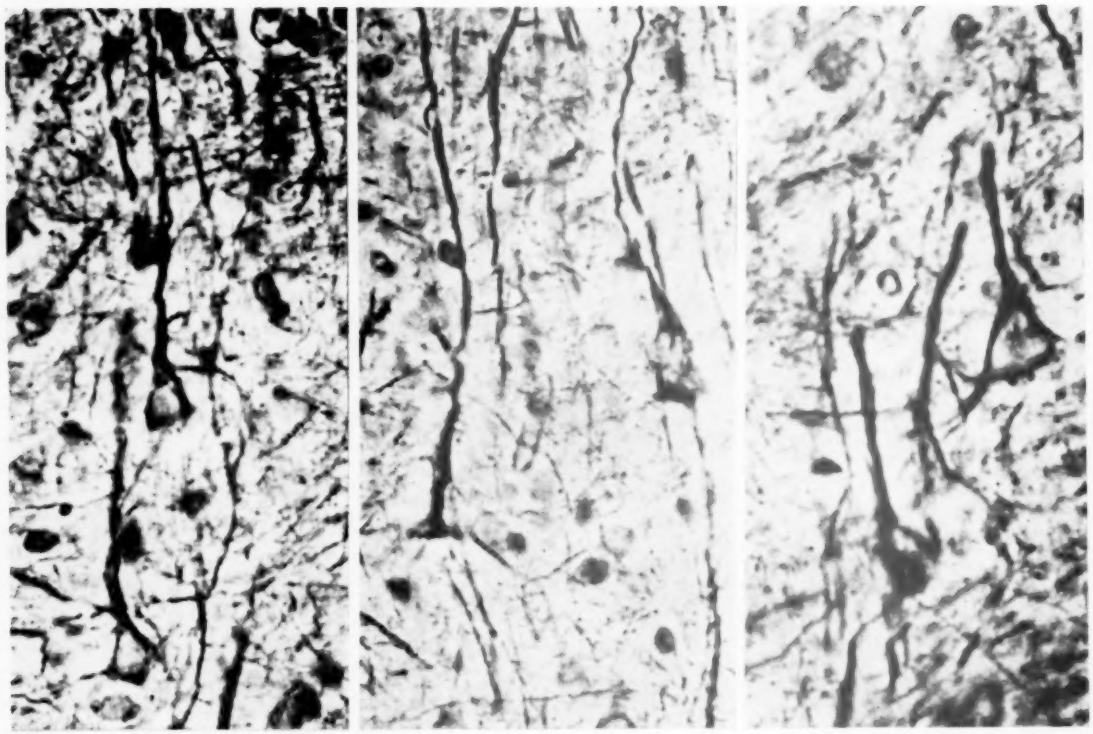


FIG. 2.—Alzheimer neuro-fibrillary changes in the cerebral cortex. (Braunmühl stain.)

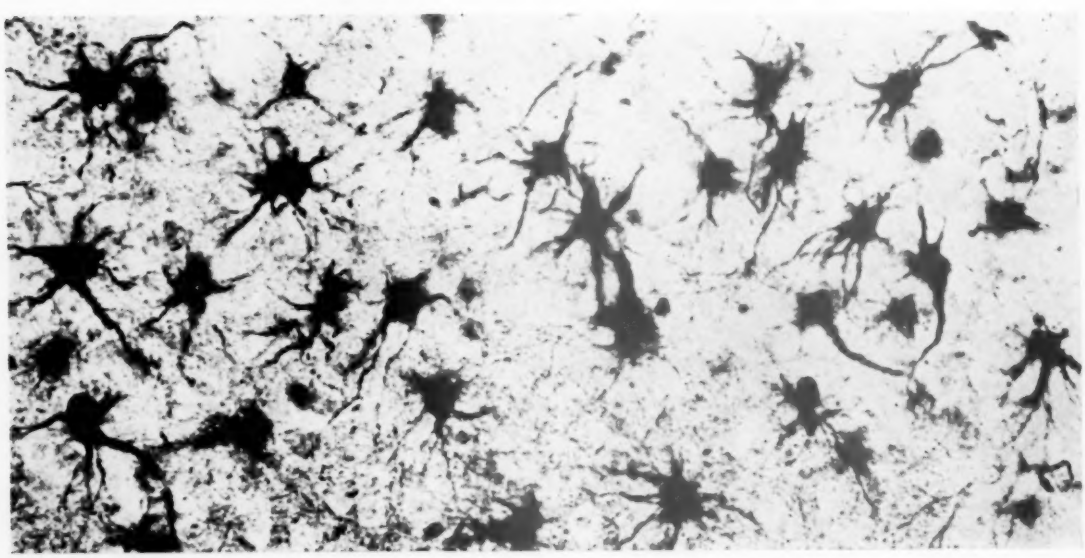


FIG. 3.—Macroglia reaction (Cajal stain) in the cerebral cortex.

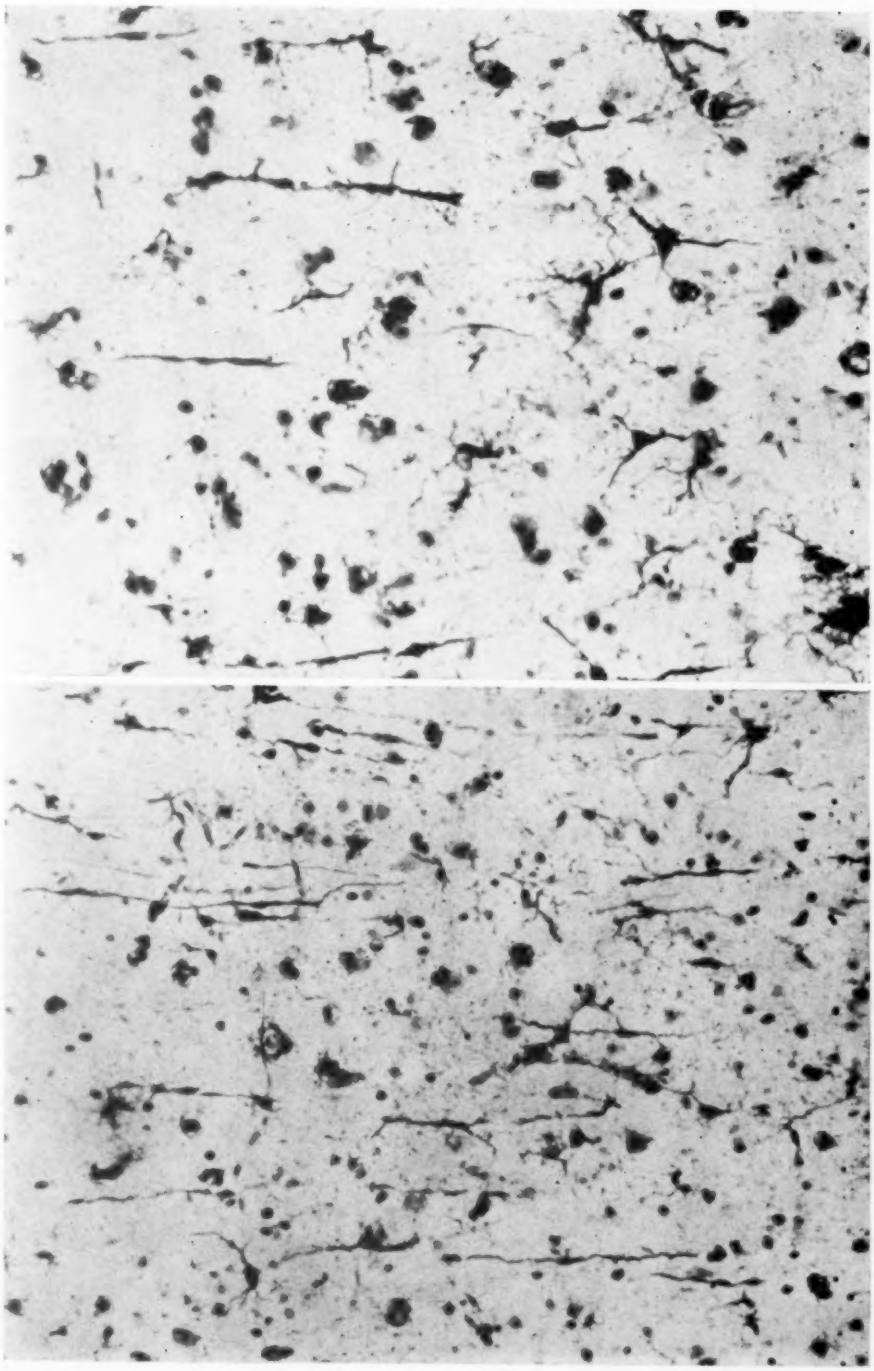


FIG. 4.—Microglia reaction and formation of rod cells, (Hortega stain) in the cerebral cortex.

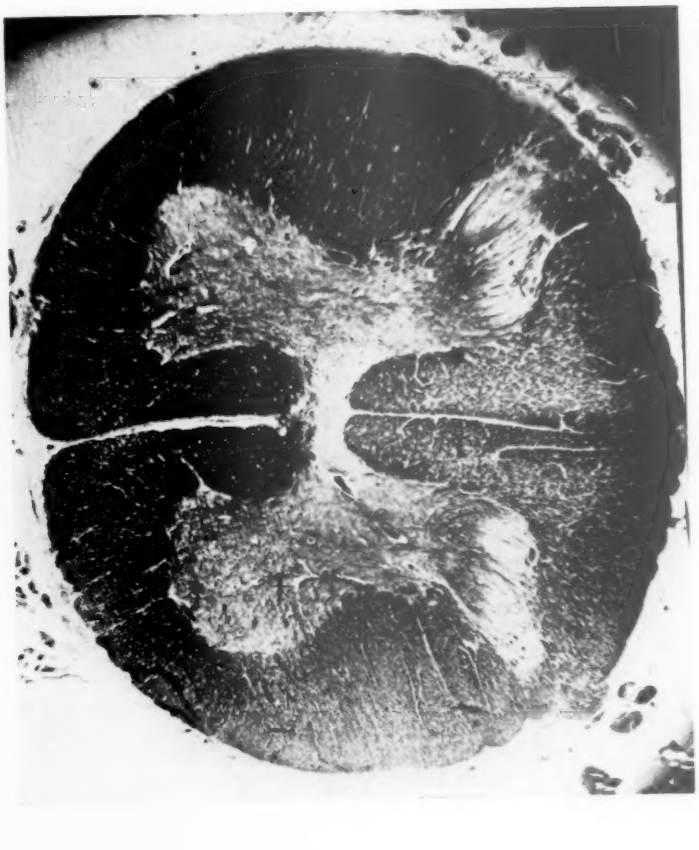


FIG. 6.—Partial degeneration of the lateral posterior tracts. (Weigert stain.)

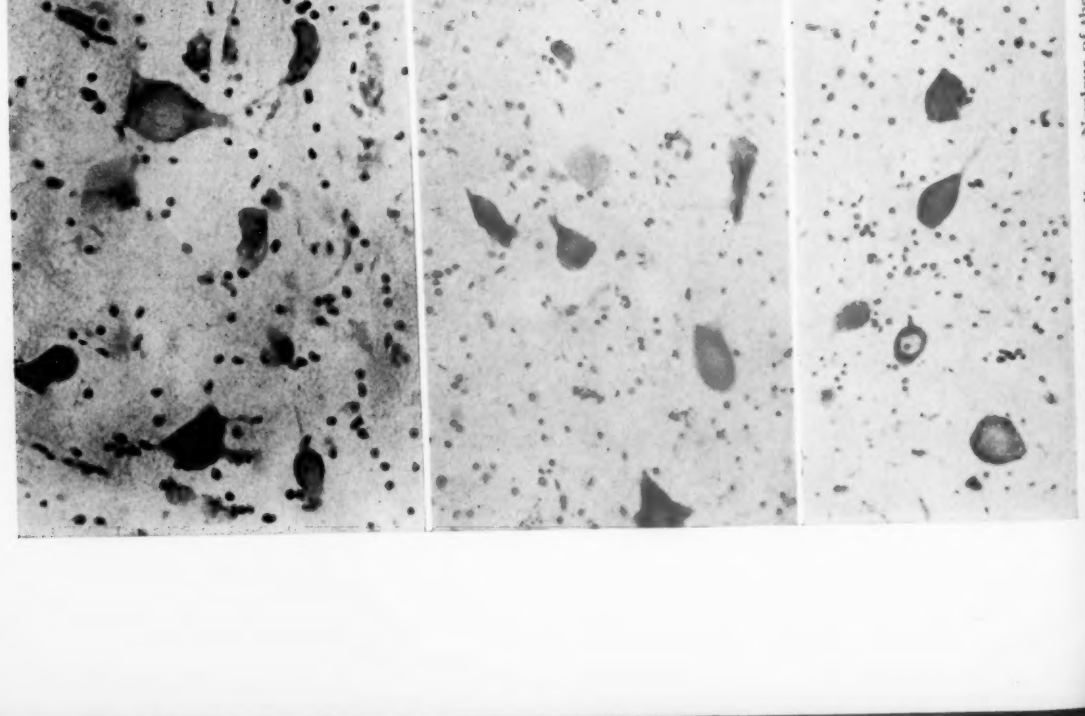


FIG. 5.—Lesions of the nerve cells. a. Nucleus of the 12th nerve;

partially dissolved by the common solvents of fats such as acetone, ether, xylol. In the Nissl stain the undissolved material had a yellowish tinge. Some neuron cells showed more severe lesions characterized by "colliquation" of the cytoplasm and severe alteration of the nucleus. More rarely, simple swelling of the cytoplasm and chromatolysis was observed. In the Bielschowsky and Braunmühl preparations the characteristic neurofibrillary alteration of Alzheimer was seen on several occasions to affect the large pyramidal cells (Fig. 2); there were regions in which several cells in the same microscopic field were affected while in other regions no neurofibrillary alteration could be found within numerous fields. Senile plaques were never observed, although a thorough search was made extending to a large number of sections and regions. Intracellular argentophil bodies such as those described in Pick's disease were likewise never observed.

In both Nissl and Cajal preparations the neuroglia cells appeared increased in number and size within the areas of neurocellular damage (Fig. 3). The cells exhibited abundant cytoplasm, large pale nucleus and short plump dendrites, but no degenerative forms of the "ameboid" type nor the peculiar glia nuclei described by Alzheimer in pseudosclerosis and Wilson's disease, were observed. Proliferation of glia was also present in regions of relatively mild neurocellular changes. Large astrocytes were frequently seen in the subcortical white matter. Increased satellitosis was frequently found and occasionally true neuronophagia was observed.

The oligodendroglia showed the characteristic change known as "acute swelling." This was diffusely present throughout the cortex. The microglia as studied in Hortega preparations showed striking changes (Fig. 4): there was considerable increase in the number of microgliacytes, especially in the areas of major neurocellular damage. Hypertrophic forms were frequently seen showing enlarged cell bodies and numerous dendrites. Rod-shaped cells of varying size were present; they were arranged perpendicularly to the surface of the convolution and were at times so numerous as to simulate the microglia picture seen in general paralysis. In no instance did the microglia of the cortex show transformation into compound-granular corpuscles.

The myelin preparation of the cortex showed nothing unusual.

The blood vessels of the cortex were intact: there were no arteriosclerotic changes nor perivascular infiltration.

These cortical changes were most pronounced in the frontal and temporal lobes. In the former, cortical fields of the external, medial and basal aspect were equally involved; the motor region was also damaged: numerous Betz cells had disappeared, and the remaining ones showed severe alterations. In the temporal lobe, the three convolutions were involved more markedly in the anterior third. The parietal region showed moderate or slight lesions while the occipital lobe appeared much better preserved.

Centrum Semiovale.—Large sections of this region stained with methods for myelin showed nothing of interest. The axons were likewise intact. In the Nissl and H and E preparations small circumscribed areas of glia proliferation were occasionally seen. Compound granular corpuscles were absent. The blood vessels showed occasional thickening of the intima and adventitia proliferation. There was no perivascular infiltration.

Caudate Nucleus and Putamen.—The changes in these structures appeared similar in nature to those found in the cortex. They consisted mainly of degeneration of neurons and glia reaction. The large neuron cells appeared definitely more severely damaged than the small ones; in fact, in numerous fields no normal large cells were to be observed. Vacuolization of cytoplasm and marked alteration of the nucleus were often seen in this type of cells. There were no Alzheimer's neurofibrillary changes. Some gitter cells were occasionally observed in the perivascular space. The glia was increased in number and some hypertrophic types were seen, but no Alzheimer glia nuclei were present. Myelin preparations appeared normal. *The globus pallidus* showed similar alteration: there were, in addition, free in the tissue a few globules of amorphous substance varying in diameter from 20 to 50 micron, which appeared to consist mainly of calcium. *The optic thalamus* and the subthalamic structures were better preserved; there was, however, a considerable amount of fat within the cytoplasm of numerous nerve cells. The substantia nigra appeared normal. *The cerebellum* showed little change. Its architecture was well preserved, the Purkinje cells were only slightly diminished in number. Myelin preparations and silver stains showed nothing of significance. The cells of the nucleus dentatus were swollen and contained an eccentric and picnotic nucleus.

Medulla.—Myelin stains showed normally myelinated tracts. In the Nissl preparations most of the nerve cells showed considerable alterations. These were most advanced in the hypoglossal nuclei (Fig. 5a) but extended also to other nuclei and to the cells of the substantia reticularis. Some of the nerve cells were markedly swollen, contained no Nissl bodies but an homogeneous cytoplasm, yellowish in color, when stained with thionine. The nucleus had often disappeared or, when present, was eccentrically located and picnotic. In other occasions the swelling was limited to one portion of the cellular body. Fatty substances similar in their properties to those found in the cortical neurons were present in many of these degenerated cells. Other cells were shrunken and distorted, with darkly stained cytoplasm and picnotic nucleus. There were some reactive changes of the glia.

Spinal Cord.—In the Nissl preparations of cord segments corresponding with the cervical and lumbar enlargement and the middle part of the thoracic portion, there were striking neurocellular alterations (Fig. 5b and c) similar in nature to those found in the medulla. They ranged from marked swelling to extreme shrinkage. Changes were particularly pronounced in the cells of the anterior horn; in numerous instances no neuron cells but

PLATE

FIG. 5.—Lesions of the nerve cells. a. Nucleus of the 12th nerve;

only a few yellowish amorphous bodies were seen in the whole anterior horn. The glia had proliferated; no gitter cell formation or perivascular infiltration was ever seen. Cellular alterations were more frequent in the cervical portion of the cord, less pronounced in the dorsal and lumbar, slight but still present in the sacral segment.

Myelin stains of the cord, including Weigert-Pal, Weil and Spielmeyer, showed no systematic degeneration of tracts. This was confirmed by the absence of glia reaction in the Holzer preparation. However, in some sections there was a partial discoloration of the posterior and lateral columns which extended for a short segment and varied considerably from level to level (Fig. 6). Sections corresponding with these regions and stained with scarlet R showed the presence of few gitter cells but there was no glia reaction detectable with Holzer's method.

COMMENT

The classification of the case herein described offered some difficulty. In view of the progressive muscular waste accompanied by marked fibrillation, amyotrophic lateral sclerosis was taken into consideration although clinical signs of involvement of the pyramidal tract were extremely scanty. The mental picture was considered, however, atypical since psychotic manifestations which have been repeatedly reported in patients affected by amyotrophic lateral sclerosis are of milder character than in the present case. The pathologic examination, showing no systemic degeneration of the pyramidal tract, definitely ruled out this diagnosis.

The age of the patient and the organic type of psychosis suggested presenile dementia. A case of Pick's disease associated with amiotrophic lateral sclerosis which might bear some clinical similarities to the present case was reported by Miskolczy and Csermely(1). However, the pathologic examination of that case showed the typical picture of Pick's disease associated with degeneration of the lateral columns while in the present case no circumscribed cortical atrophy was seen and the cortical lesions were not those of Pick's disease.

Alzheimer's disease may be taken into consideration since a few atypical cases of this condition associated with spasticity and circumscribed muscular atrophy have been reported (Barret(2), Lowenberg-Waggoner (3), Van Bogaert *et al.*(4)); moreover, post mortem, the characteristic neurofibrillary alteration was frequently found to involve the cortical neurons. However, the neuropathologic picture was not that found in Alzheimer's disease; profound disorganization of the brain cortex was not seen, senile plaques were absent and the microglia reaction was of an entirely different character. It should be noted that Alzheimer's neurofibrillary changes have been reported in a variety of brain diseases and are far from being pathognomonic of Alzheimer's disease.

The clinical and pathologic features of the present case fit fairly well into the type of presenile psychosis described by Jakob(6). In view of the fact that this condition is still little known, a short summary of the few cases reported in the literature and a brief account of the disease appears pertinent at this point. The first complete descriptions were published almost at the same time by Creutzfeld(5) and Jakob(6). Creutzfeld(5) described the case of a woman 22 years of age who showed spastic paresis of the legs, tremors and speech defect followed six months later by confusion and excitement. The disease progressed rapidly to a state of extreme spasticity and profound dementia; the duration was about one year. Post mortem there were diffuse degenerative changes of the neurons and marked glia reaction. In addition, scattered foci of cellular destruction were observed. The blood vessels showed adventitia and endothelium proliferation. The pyramidal tracts were degenerated.

Four similar cases were described by Jakob(6). The first patient, a woman aged 53, following a one-year period in which she complained of "weakness" of the legs and depressed mood, developed pareto-ataxic gait, muscular rigidity and bulbar signs. At the same time progressive intellectual deterioration with marked depression was observed. The patient died some 15 months after the onset. Pathological examination showed extensive and diffuse degenerative change of the nerve cells of the cortex, striatum and motor nuclei of the medulla and spinal cord. The glia was hypertrophic and hyperplastic. The myelin showed no changes apart from a paleness of the pyramidal tracts. The second patient, a woman aged 34, showed a mental picture resembling acute schizophrenia but accompanied by spastic gait, ataxia and muscular hypertonicity.

Deterioration was rapid and the patient died 6 months later. The pathology was almost identical to that of the previous case. The third patient, a man aged 42, showed speech defect, ataxic gait, partial ophthalmoplegia, followed a few months later by a Korsakow-like psychosis. Marked muscular atrophy was present. The disease lasted about one year. The pathologic changes were of the same type as those of the two previous cases but subacute partial degeneration was found in the pyramidal tracts and in the cerebellar pedunculi. The fourth patient, whose pathologic picture was essentially the same, a woman aged 38 showed a mental picture resembling incipient general paresis with dysarthria, confusion, paranoid trends. After a brief remission, a Korsakow-like psychosis developed accompanied by generalized rigidity and pyramidal signs. The disease lasted 14 months.

The two cases described by Kirschbaum (7) showed the same type of diffuse degeneration of nerve cells and of glia reaction. The white matter was, however, intact. Clinically, the first patient, a man 44 years of age, showed an organic type of psychosis characterized by memory impairment, intellectual deterioration and speech defect. The duration of the disease was 9 months and only during the last period were neurologic symptoms, such as tremors and rigidity, observed. The second patient, a man aged 54, showed ill-defined mental changes with marked intellectual deterioration and speech defect. Generalized ataxia and tremors were observed. During the last 2 months convulsions occurred. The duration of the disease was two and a half years.

Zimmermann's(8) patient, a man aged 32, was affected by a depressive psychosis with mental deterioration which lasted about 2 years. Conspicuous neurological signs were absent. Post mortem, ubiquitous degenerative changes of the nerve cells were found. The glia was hypertrophic and proliferated: ameboid types were occasionally observed. The endothelial cells of the small blood vessels were diffusely swollen.

Heidenhain(9) reported 3 cases. In all of them the pathologic changes were similar to Jakob's cases, consisting mainly of diffuse degeneration of nerve cells and glia reaction. Blood vessels and myelin were intact. The distribution of the lesions was, however, different from Jakob's cases; in fact, the occipital cortex showed more severe lesions than the motor or the frontal regions and the basal ganglia were relatively little involved except in the third case. Clinically, two patients, both men, 55 and 53 years of age respectively, showed a very similar picture characterized by a rapidly progressive dementia, speech defect and motor impairment of the lower extremities. In both cases the disease was of 4 months' duration. In the third patient, a man aged 49, the disease began with paresthesiæ and paresis followed 5 years later by generalized muscular hypertonicity, athetosis and tremors. Mental deterioration was noted only during the last months of the disease which lasted 6 years.

Meyer's(10) case was that of a man aged 55 who showed atrophy of the upper arms and shoulder and signs of pyramidal damage. There were also personality changes and mental deterioration. The duration of the disease was 9 months. Post mortem, diffuse cellular changes were found to involve the cerebral cortex, the basal ganglia and to a greater extent the neuron cells of the spinal cord. There was in addition degeneration of the lateral and, partially, the anterior funiculi.

Stender(11) reported two cases, the first, a woman 44 years of age, developed a psychosis characterized by marked excitement and auditory hallucination rapidly resulting in complete dementia. Five months later, motor impairment with hypertonicity of the left arm was noted. Death occurred 15 months after the onset of the first symptoms. The second case, a man aged 21, showed personality changes and periods of excitement followed by rapid mental deterioration. There were unilateral pyramidal signs and some generalized rigidity. The disease lasted 6 months. In both cases the histologic changes of the brain were very similar to those reported by Jakob: nerve cell alterations consisting of both shrinkage and swelling with fat infiltration were seen in the cortex, the striatum and the thalamus. The myelin was intact apart from some circumscribed paleness. Cerebellum, pons, medulla and spinal cord showed no significant lesion.

Teichmann's(12) patient, a man aged 43, following a period of a few months of vague

"neurotic" manifestations developed a depressive psychosis with mental deterioration accompanied by a motor deficit of the pyramidal type. These symptoms progressed rapidly; atrophy of the muscles of the hands and speech defect appeared. The patient died about a year after the onset of the symptoms. Post mortem there were marked neuro-cellular changes, mainly swellings, extending to the cortex, the basal ganglia and particularly the spinal cord. The pyramidal tracts were partially degenerated. Perivascular infiltration with lymphocytes was observed on several occasions.

The case described by Jansen and Monrad-Krohn(13) concerned a man of 42 who suffered from progressive dementia accompanied by dysarthria, spastic paraparesis and ataxia. The disease lasted about 18 months. Pathologic examination showed diffuse "dropping out" of nerve cells in the cortex, basal ganglia and thalamus. There was also increase of macro- and microglia. The pyramidal tracts were partly degenerated, but little change was noted in the neuron cells of the anterior horn.

Davison(14) and Davison and Rabiner (15) described three cases in sibs, two males and one female, aged 32, 33 and 39, respectively. The clinical picture was that of a spastic paresis with pyramidal and extrapyramidal features. Muscular atrophy with fibrillations was also observed. Mental changes were relatively mild. The disease extended over a period from 4 to 5 years. Pathologically, there were diffuse degenerative changes of the nerve cells of the cortex and basal ganglia with proliferation of both macro- and microglia. The pyramidal tracts were degenerated. In the first case calcification of the blood vessels of the pallidus was also observed. Two additional similar cases are reported by the same authors in two women aged 50 and 49, respectively. The last patient was notable for the long duration of the disease (5 years) and the absence of mental changes until the terminal stage.

A few other cases which may be considered as atypical instances of the disease can be found in the literature. The case of Economo and Schilder(16) concerns a 50-year-old man who showed a progressive dementia lasting five years and accompanied by dysarthria, weakness of the legs and generalized rigidity. On histologic examination, the neuron cells showed diffuse fatty infiltration; cellular atrophy was seen in the globus pallidus but little in the cortex. There were cellular alterations and proliferation of glia in the corpus striatum, globus pallidus and cerebellum. McMenemey and Pollak(17) reported recently a similar case: a woman aged 60 showed ataxic gait and scanning speech followed shortly after by a demential state organic in type and rapidly increasing in severity. Death occurred about four and a half months after the onset of the disease. Histologic examination revealed changes throughout the central nervous system amounting to slight degeneration of the nerve cells and disproportionate hyperplasia of the fibrous astroglia. The patient of Fleischhacker(18), a woman of 40, showed more diffuse nerve cell changes with accentuation of the process in the corpus striatum; there were also glia cells resembling Alzheimer's type. The disease had lasted 12 years and was characterized by a psychosis with ideas of persecution and a neurological syndrome suggesting paralysis agitans.

From the study of the present case and those above reviewed (a total of 25 cases), it appears possible to reconstruct the salient clinical features and pathologic findings which may be considered characteristic of the disease. Fifteen patients were males and 10 females. The most usual age of onset was the fourth and fifth decade of life (16 cases). Six patients were in the sixth decade and two typical instances (Creutzfeld, Stender) were in the third decade. The disease may then be considered a presenile condition, but the possibility of an earlier onset, an occurrence observed also in Alzheimer and Pick diseases, should be kept in mind. The course is rapid, the disease lasting from 6 months to 2-3 years (average about 1 year). Longer durations were observed in Heidenhain's third case and in some of Davison and Rabiner's patients.

Three stages of the disease have been distinguished. A prodomal stage of a few months' duration is characterized by slight mental changes such as fatigability, loss of interest, memory impairment, episodes of inconsistent behavior. At the same time unsteadiness of gait, some motor impairment

and speech defect are often present: occasionally, as in the present case and in Meyer(10) and Teichmann's(12) patients, severe muscular wasting with fibrillations are early manifestations of the disease.

The second stage, in which the symptomatology is complete, is characterized by psychotic manifestations and neurological symptoms. The mental reaction is that of a progressive dementia, organic in type. Confabulation, delusions and hallucinations have been reported in many a case. Mental pictures recalling initial general paresis or Korsakoff psychosis are mentioned on some occasions. More commonly however the mental changes consist of a progressive narrowing of interest, memory impairment, apathy and intellectual deterioration as observed in the patient here described. The neurological picture is manifold, signs of damage of the lower and upper motor neurons being usually associated with extrapyramidal manifestation such as tremors, athetosis, disturbances of muscular tone. In the present case lesions of the lower motor neuron with muscular atrophy, fibrillation, absence of reflexes, dominated the clinical picture. Objective disturbances of sensibility are rare. Dysarthria is usually present. Dysphagia and other bulbar manifestations, as observed in the present case, have been occasionally reported. Involvement of the cranial nerves manifesting itself in nystagmus and anisocoria, as in the present case, have been repeatedly described.

In the third or terminal stage there is extreme dementia, generalized spasticity and severe motor impairment.

Remissions of short duration have been recorded many a time: in the present case two periods of remission of a few weeks were noted.

The histological lesions of the central nervous system are widespread. The nerve cells are diffusely involved showing varying degenerative changes, none of which, however, is characteristic of the disease. Shrinkage and hyperchromatosis are found together with swelling of the nerve cells and fatty infiltration. Usually, as in the present case, the most affected cortical areas are in the frontal (including the motor region) and temporal lobes. The Alzheimer's neurofibrillary changes found in the present instance have not been described in other cases. Senile plaques are always absent. Cellular alteration of the basal ganglia are the rule although their severity widely varies from case to case. The cerebellum is usually spared. Cell changes in the anterior horn which were outstanding in the present case, have been frequently reported. The myelin sheaths are often involved; diffuse degeneration of the centrum semiovale has been reported by Jakob(5), and by Jansen and Monrad-Krohn(13) while in more numerous cases the spinal tracts particularly the pyramidal, showed degeneration, although instances with intact spinal cord are on record (Stender(11)). In every case, proliferation of neuroglia is present: both the large protoplasmic (Jakob(6)) and the fibrotic types (Meyer(10), Jansen-Krohn(13)) of glia have been described while Alzheimer glia nuclei were present only in Davison and Rabiner(15) cases. Microglia reaction (rod cells) can be seen in the illustrations of the first papers of Jakob(6) and Creutzfeld(5); more recently Davison(14), Jansen(13) and Davison-Rabiner(15), have stressed the finding of hyperplastic and hypertrophic microgliacytes. In the present case these changes were outstanding in the damaged cortical areas; numerous hypertrophic and rod-shaped microgliacytes were observed. This type of microglia reaction appears to be an important feature in the pathologic picture of the disease.

The wide variations in the distribution of pathologic changes throughout the central nervous system may account for the varieties of clinical pictures. A cerebral type has been distinguished in which mental alteration dominates the clinical picture; this has its pathologic correlate in severe changes of the cerebral cortex (cases of Kirschbaum(7), Zimmermann(8), Stender(11)). In such instances the clinical diagnosis may offer considerable difficulties and the differentiation from Alzheimer's disease appears impossible on clinical grounds. The "spinal type" shows a picture resembling amiotrophic lateral sclerosis. The cortico-striato-spinal type, in which mental changes coexist with extrapyramidal signs and lesion of the motor neuron, offers less diagnostic difficul-

ties. Numerous combinations are possible and have been in fact verified clinically: the present case could be classified as a cortico-spinal type, with involvement of the lower rather than the upper neuron.

In view of the protean clinical manifestations and the uncharacteristic type of pathology one may raise the question as to the advisability of considering this condition a morbid entity: there is little doubt, however, that the association of a rapidly progressing presenile dementia organic in character with neurological manifestations of lesions of both the pyramidal and the extrapyramidal system, constitute a fairly characteristic clinical picture. The widespread distribution of the pathologic alterations, rather than the type of the single lesions, appears to be peculiar to this condition. Some justification therefore exists for grouping these cases in a common clinico-pathologic syndrome, at least temporarily, until more numerous patients are observed and the etiology of the process becomes clear.

The cause of the disease and the nature of the pathologic process are still unknown. Considerable weight has been given to the hypothesis that an encephalitis (possibly a variant of epidemic encephalitis) is at the base of the disease. However, since all investigators, with the exception of Teichmann(12), have stressed the absence of perivascular infiltration, it is difficult to conceive of an encephalitic process of relatively acute course, without involvement of mesodermic elements. The occurrence of familial cases (Meggendorfer(19), Davison and Rabiner(15)) would indicate endogenous factors but these cases are still the exception. The suggestion made by Josephy(20) of some similarities between Jakob's disease and pellagra seems worthy of consideration. Both conditions show a combination of mental changes and neurologic manifestations. In both diseases there is diffuse degeneration of the neuron cells and non-systemic myelin destruction. The swellings of the spinal cord cells observed in the present case bear striking similarities to those described by Pentschew(21) in pellagra. Moreover, the hyperplastic and hypertrophic changes of the microglia with formation of rod cells so characteristic of the present case, have been found to be an outstanding feature of the pellagrin brain (Morel(22)). The hypothesis of vitamin depletion as cause of the disease deserves therefore further study and experimentation. In the present case vitamin therapy was attempted without success. However, while the doses of vitamin E were undoubtedly high, other vitamins and particularly nicotinic acid were not given in doses adequate to offer a decisive therapeutic test.

SUMMARY

The case of a man aged 53 is described, who showed an organic type of dementia accompanied by wasting and fibrillation of the muscles of the upper extremities. The course of the disease was rapidly downhill with increasing mental deterioration and marked muscular wasting, extending to the lower extremities. Vitamin E therapy was used without apparent effect. The duration of the disease was about one year. Pathologically, there were widespread lesions of the neuron cells extending to the cerebral cortex, the basal ganglia and particularly the motor cells of the medulla and spinal cord. The neuroglia was hyperplastic and hypertrophic; the microglia had also proliferated and numerous rod-shaped cells were observed. The case is considered an instance of presenile psychosis of the Jakob's type (cortico-striato-spinal degeneration). The few similar cases reported in the literature are summarized and some clinical, pathologic and etiologic aspects of the disease are briefly discussed.

BIBLIOGRAPHY

1. Miskolczy, D., and Csermely, H.: Ein atypischer Fall von Pickscher Demenz. Allg. Ztsch. f. Psychiat., **110**: 304, 1939.

2. Barret, A. M.: A case of Alzheimer's disease with unusual neurological disturbances. J. Nerv. and Ment. Dis., **40**: 361, 1913.

3. Lowenberg, K., and Waggoner, R.: Familial organic psychosis (Alzheimer's type). Arch. Neur. and Psychiat., **31**: 737, 1934.

4. von Bogaert, L., Maere, M., and deSmedt, E.: Sur les formes familiales précoces de la maladie d'Alzheimer. Monatschr. f. Psychiat. u. Neur., **102**: 249, 1940.

5. Creutzfeldt, H. G.: Ueber eigenartige herdformige Erkrankung des Zentralnervensystems. Nissl-Alzheimer Arb. Ergänzungband, p. 1, 1921.

6(a). Jakob, A.: Ueber eigenartige Erkrankungen des Zentralnervensystems mit bemerkenswertem anatomischem Befunde. Ztsch. f. ges. Neur. u. Psychiat., **64**: 147, 1921.

6(b). Jakob, A.: Die extrapyramidale Erkrankungen. Berlin, Springer, 1923, pp. 215-256.

7. Kirschbaum, W.: Zwei eigenartige Erkrankungen des Zentralnervensystems nach Art der spastischen Pseudosklerose (Jakob). Ztsch. f. ges. Neur. u. Psychiat., **92**: 175, 1924.

8. Zimmermann, R.: Ein weiterer Fall von Pseudosklerosis spastica. Ztsch. f. ges. Neur. u. Psychiat., **116**: 1, 1928.

9. Heidenhain, A.: Klinische und anatomische Untersuchungen über eine eigenartige organische Erkrankungen des Zentralnervensystems in Praesenium. Ztsch. f. ges. Neur. u. Psychiat., **118**: 49, 1928.

10. Meyer, A.: Ueber eine der amyotrophischen Lateralsklerose nahestehenden Erkrankung mit psychischen Störungen. Ztsch. f. ges. Neur. u. Psychiat., **121**: 107, 1929.

11. Stender, A.: Weitere Beitrage zum Kapitel "Spastische Pseudosklerose Jakobs." Ztsch. f. ges. Neur. u. Psychiat., **128**: 528, 1930.

12. Teichmann, E.: Ueber einen der amyotrophischen Lateralsklerose nahestehenden Krankheitprozess mit psychischen Symptomen. Ztsch. f. Neur. u. Psychiat., **154**: 32, 1935.

13. Jansen, J., and Monrad-Krohn, G. H.: Ueber die Kreutzfeld-Jakobschen Krankheit. Ztsch. f. ges. Neur. u. Psychiat., **163**: 670, 1938.

14. Davison, C.: Spastic pseudo-sclerosis (cortico-pallido-spinal degeneration). Brain, **55**: 247, 1932.

15. Davison, C., and Rabiner, A. M.: Spastic pseudo-sclerosis (Disseminated encephalopathy: cortico-pallido-spinal degeneration). Arch. Neur. and Psychiat., **44**: 578, 1940.

16. Economo, C., and Schilder, P.: Eine der Pseudosklerose nahestehende Erkrankung im Praesenium. Ztsch. f. ges. Neur. u. Psychiat., **55**: 1, 1920.

17. McMenemey, W. H., and Pollak, E.: Presenile disease of the central nervous system. Report of an unusual case. Arch. Neur. and Psychiat., **45**: 683, 1941.

18. Fleischhacker, H.: Afamiliäre chronisch-progressive Erkrankung des mittleren Lebenalters von Pseudosklerotyp. Ztsch. f. ges. Neur. u. Psychiat., **91**: 1, 1924.

19. Meggendorfer, F.: Klinische und genealogische Beobachtungen bei einem Fall von spastischer Pseudosklerose Jakobs. Ztsch. f. ges. Neur. u. Psychiat., **128**: 337, 1930.

20. Josephy, H.: Jakob-Creutzfeltsche Krankheit (Spastische Pseudosklerose Jakob) in Bumke-Foerster Handbuch der Neurologie. Springer. Berlin, 1936, Vol. 16, p. 882.

21. Pentschew, A.: Ueber die Histopathologie des Zentralnervensystems bei der Psychosis pellagrosa. Ztsch. f. ges. Neur. u. Psychiat., **118**: 17, 1928.

22. Morel, F., and de Montmollin, R.: Psychose ethylico-pellagreuse. Monatschr. f. Psychiat. u. Neur., **102**: 210, 1940.

THE TOXIC DELIRIOUS REACTIONS OF OLD AGE

G. WILSE ROBINSON, JR., M. D., KANSAS CITY, MO.

During the past five years the staff of the Neurological Hospital has become increasingly interested in the problem of the abnormal mental reactions of old age. Several reports have been published, outlining our observations and conclusions in these matters(1, 2, 3, 4). One of the more common conditions in this age group, consisting of patients over 60 years of age, is the toxic delirious reaction. Over 20 per cent of all patients over 60 admitted to the hospital had as their primary and sole abnormal mental reaction a toxic delirious state.

In addition to this 20 per cent, approximately another 20 per cent had a toxic delirious reaction superimposed upon some other type of abnormal mental reaction. This high incidence of approximately 40 per cent has not, in my opinion, been recognized in the past. It is not only a major nursing problem, but frequently it causes death unless proper treatment is started early. I feel that it can be prevented in the great majority of cases, and that it readily yields to treatment. It is the purpose of this presentation to discuss this problem from a standpoint of etiology and prevention, diagnosis and treatment.

The term "toxic delirious reaction" as here used includes a wide variety of cases which do not have a common etiological factor, and probably do not have a common pathological or pathological-physiological picture. Likewise, the symptomatology varies from a state of profound collapse, somewhat similar to that seen in macroscopic vascular accidents in the brain, to a delirious hallucinosis similar to delirium tremens. This group is heterogeneous and has only one common denominator, which is a distinct disturbance of the metabolic processes, not only of the brain but of the entire organism.

While the most common type of symptomatology is delirium with hallucinosis, confusion and over-activity, many other types have been seen. Very few cases have a clearly cut, single etiology. The age of the patient may cause reduced resiliency and adjustability. The cardiovascular system may be unable to meet emergencies.

In the study of the older patient at the Neurological Hospital, the age of 60 has been selected arbitrarily as the lower limit. Every patient over 60 who is admitted to the hospital is added to the series. Since this study was begun, we have seen 128 patients over 60 years of age. All were studied clinically, but not all were treated adequately. Of this group, 27 patients were thought to have as their major clinical condition a toxic, exhaustive, metabolic delirious state. In addition to this group, an equal number had a rather profound toxic, exhaustive metabolic, delirious state superimposed upon some other psychotic condition.

Etiological factors in this type of reaction are drugs, malnutrition, prolonged recumbency following major or minor illnesses, operations or trauma, hypertensive states, cardiac failure and primary metabolic conditions such as diabetes mellitus. While all these etiological factors are capable of producing toxic delirious reactions in younger people, an analysis of the older cases indicates that the older the person the more susceptible he is to this type of psychotic reaction. While Wartman(5) has shown that every male and almost every female over 60 has a demonstrable cerebral arteriosclerosis, it has been shown that in spite of this arteriosclerosis most of the psychotic states of a reversible type in the older patients can and will respond to the same type of psychiatric therapy which is applied to the younger patient in the correction of the agitative-depressive psychoses, manic-depressive, psychoneurotic and toxic delirious reactions.

Arteriosclerosis without occlusion or rupture does not seem to be an etiological factor of major importance. In spite of the arteriosclerosis which we know is present in the older patient, he can and does recover from the types of reactions seen in younger patients if he receives proper therapy(1, 2, 3,

4). Since cerebral arteriosclerosis is an irreversible phenomenon, psychoses caused by cerebral arteriosclerosis would also be irreversible. This point has been discussed in detail in several previous contributions. However, I feel that the physical and physiological degeneration seen in the older patient does play a part in the total etiology, in that it decreases resiliency and adjustability to physiological changes; and minor etiologies which would have no noticeable effect upon the younger patient may produce in an older patient a profound psychotic reaction which he is incapable of throwing off even when the activating etiology has been corrected or eliminated. This is the major point I wish to make in this presentation. If this is kept constantly in mind when the older patient presents himself for treatment, common therapeutic procedures which are innocuous in the younger patient but disastrous to the older patient will not be used.

The symptoms in these patients can be divided into three major types: psychotic, physical and neurological. The outstanding psychotic symptoms are diurnal drowsiness, nocturnal restlessness, behavior disorders, hallucinations, clouding of consciousness, deficient orientation and grasp, with occasional dream-like experiences. However, hallucinations and dream-like experiences are not as common in the older patient as they are in the younger delirious patient. The patients under consideration are apt to be noisy, confused, disoriented, over-active, frightened and non-cooperative.

On the physical side there is a history of failure to eat properly and to take sufficient fluids. Bowel incontinence is rare, but lack of control of the urinary function is seen frequently. The malnutrition and dehydration are usually responsible for the physical findings other than those which are evidences of the etiology. There is usually a fever which in the early stages is quite mild unless there is an acute infectious disease as the major contributing etiology, and a leucocytosis which is mild, again unless there is an acute, major inflammatory process. There is a loss of weight, exhaustion and evidences of dehydration both in the skin and mucous membranes. The red blood cell count and the hemoglobin may be high. In spite of the leucocytosis the differential count may be normal. Other blood chemical analyses indicate a tendency toward concentration not only of cells and other solid matter, but also of the various electrolytes. The N.P.N. is usually higher than is to be expected from this concentration factor. Urine is usually concentrated, of strong odor and acid reaction. Sugar and albumin are found in almost every case, if repeated examinations are made.

If malnutrition has progressed very far there may be evidences of vitamin deficiency, but usually in the early stages and probably in the late stages the only evidence of malnutrition will be a diabetic-like glucose tolerance curve. This phenomenon and its significance were reported recently by the hospital group(6).

The finding of the diabetic-like glucose tolerance curve is, in our opinion, pathognomonic of this condition. However, failure to find this curve does not of necessity rule out a toxic delirious state. It may be that the patient is first seen too early in the process for a malnutrition curve to have developed, or if the process is late the curve is not specific. It may still be that of pseudodiabetes from malnutrition, or may be a flat curve. The significance of these flat curves which occur in profound malnutrition has not yet been explained satisfactorily.

Neurological findings are tremor, incoordination, reflex excitability, asthenia, ataxia and perhaps some evidence of a major vascular disease or accident.

From the standpoint of prognosis, it is necessary that this type of problem be differentiated from the true arteriosclerotic psychoses and cases of senile dementia. These syndromes, which in the past have been considered to be the most common of all the abnormal mental reactions of old age, have been found to have an incidence of 10.1 and 17.1 per cent, respectively. These are usually irreversible psychotic types, although some of the arteriosclerotic phenomena do improve with therapy. It must also be remembered that frequently, due to improper medical and nursing care, there may be superimposed upon these two irreversible syndromes a toxic delirious state

which has aggravated the symptoms and increased the nursing problem. However, we feel that clearly cut cases of the three types can be readily differentiated.

While the symptoms of a toxic delirious reaction frequently are similar to the symptoms of the other two types, the most important differential point is the speed and type of onset. Toxic delirious reactions usually come on with moderate speed. There is usually the history of some illness, operation or trauma which required bed rest. During the bed rest the patient may or may not have been given drugs. Within a few days or a week or two after the precipitating episode, the patient becomes restless, perhaps irritable, and develops insomnia and anorexia. The usual therapeutic procedure instituted at this time by the majority of physicians is to give sedatives and vitamins. The sedatives aggravate the condition and the vitamins have no apparent effect upon the clinical course. The patient rapidly progresses into a condition which makes it impossible for him to be kept at home or in a general hospital. When the psychiatrist is called in or the patient is transferred to a psychopathic hospital, symptoms are usually fully developed as outlined above.

However, in a few cases there is no history of this kind, and apparently the condition developed without any clearly cut etiological background. The diagnosis of these cases must be made by ruling out the two types of irreversible phenomena. We have followed Muncie's criterion that a diagnosis of arteriosclerotic psychosis must not be made unless there is evidence of a prior vascular occlusion. We have usually found that it takes several vascular occlusions to precipitate a permanent psychosis. If there is no evidence of paralysis or anesthesia of a cerebral type, arteriosclerotic psychosis has been ruled out.

Senile dementia, on the other hand, is an insidious condition developing slowly over a long period of time, leading in many cases to a symptomatology similar to that seen in toxic delirious reactions but giving no history of an acute exacerbation or a sudden onset. It must be remembered that almost every person over 60 years of age will begin to develop senile mental and physical changes. These senile changes will progress slowly over a period of months or years. At some stage during this progression an acute illness, a turning to sedatives, or the development of a metabolic disturbance may precipitate a toxic delirious reaction. Correction of this reaction will leave the patient with a minimum of senile changes, well able to return to home and sometimes to a gainful occupation if this is necessary. Therefore, the history of moderate senile changes before the acute episode does not of necessity contraindicate a therapeutic program directed at the correction of the superimposed toxic delirious reaction.

It is readily apparent what the major etiological factors are in these problems. The important thing to remember is that the older patient does not have the resiliency of the younger patient, does not have the physical and physiological adjustabilities and, threfore, cannot tolerate the same type of therapeutic program that the younger patients can. The most common mistake made in this respect is the use of sedatives, the bromides and the barbiturates. There are many cases where a small dose of the barbiturates or a moderate, prolonged program of bromides has precipitated one of these illnesses. On the other hand, when the prodromal symptoms develop following illness, trauma, etc., such as restlessness and insomnia, the sedatives are usually resorted to and the small doses given are enough to unbalance the metabolic adjustment in such a way that a severe reaction is precipitated. It is my opinion that no sedatives should be given to the older patients. The opiates are harmful, also, in that they slow certain physiological processes, chiefly expectoration and other elimination processes from the lungs, and thus may lead to a pneumonic process.

LaPlace and Nicholson(8) pointed out an etiological factor in older people which may precipitate a toxic delirious reaction. This is prolonged recumbency. They felt very definitely that placing the older patient in bed flat on his back for any of several reasons will lead to changes in the dependent parts so that toxic material may develop and, of itself, solely initiate a toxic delirious reaction. This is commonly seen in surgical

and traumatic cases, and the reaction is usually diagnosed bronchial pneumonia. LaPlace and Nicholson pointed out that the bronchial pneumonic process is always a terminal event made possible by the lack of resistance of the patient, and resulting from the delirium with exhaustion. They do not feel that bronchial pneumonia precipitates these conditions, but rather that the bronchial pneumonia results from the condition. The temperature curve seen in the early stages and the leucocytosis are reactions to the general metabolic breakdown, not reactions to infection. They pointed out that many of these cases die with no evidence of a pneumonic process in their lungs. They die a metabolic and exhaustive death.

The cerebral pathology, as well as the general pathology, is non-specific. While there may be some evidence of vitamin deficiency in the changes in the brain, the usual findings at death are reversible changes with generalized intra-cellular edema and cloudy swelling of the ganglion cells. Rupture of the cell and nuclear membrane is seen frequently. Pycnotic changes may be found. In some of these cases the brains are hard, dry, much firmer than normal, without edema. In those cases the pycnotic change naturally predominates. Avitaminotic changes of the type described by Freeman(9) are not common findings in these patients. Avitaminosis is not a cause of this phenomenon. It is a more complete breakdown of all metabolic processes, and the vitamin deficiency is only incidental. Treatment with vitamins of any type, especially those of the B complex or the use of nicotinic acid alone, will not correct these conditions unless other therapeutic procedures are also used. When pathology in the nervous system results from deficiency of the B complex or any of its elements, rather specific types of neuropathies are produced. This type of pathology is not found in these cases, according to Riggs(10). Therefore, vitamin therapy cannot be expected to correct the condition.

From the standpoint of therapy, 22 cases of primary toxic delirious reaction in patients over 60 years of age were given what I consider to be adequate treatment. Of this group, 18 cases made what was considered to be an apparently complete recovery, and returned home apparently normal for their age. Three improved sufficiently to go home, but did not return to their former occupations, and 1 died. Sixteen of the cases that made an apparently complete recovery have been out of the hospital six months or longer; 15 cases are still completely well, indicating a recovery rate of 93.7 per cent in the complete recovery group. These figures include only the primary cases. Many of the secondary cases had as their primary psychotic reaction an agitative-depressive state which was corrected with convulsive shock. Other cases had irreversible types and returned to a state where they could be kept at home or in a nursing home with a minimum of attention. I do not feel that I can statistically evaluate the secondary or complicated delirious cases, because of the several factors.

The major feature of therapy is daily infusions of 10 per cent glucose in plain water. During the first two or three days, glucose in saline may be used, but it should not be continued. In the early stages, 1,000 to 2,000 c.c. may be given, but usually we find that 500 c.c. a day is sufficient throughout the entire time of hospital treatment. These infusions are given very slowly, never more than 50 drops a minute. It has been pointed out by Sparkman(11) that if glucose is given at this rate or at a slower rate, no embarrassment of respiratory or cardiac function is to be expected.

Before glucose infusions were used in the treatment of these cases, a series of 16 patients showed 13 deaths, 2 partial recoveries, and 1 complete recovery. In all the 22 treated patients noted above, there is only 1 case that recovered completely immediately following the clearing up of the etiological factors. This was a case of straight barbital intoxication. There were several other cases of drug intoxication, however, where the general metabolic breakdown had progressed so far that recovery did not follow the stopping of the drugs, but only followed the use of the infusion program. The rationale of this procedure is entirely empirical. It resulted from the circumstances outlined in case No. 1 below. Naturally, however, we have attempted to explain our results, al-

though space does not permit extended discussion of possible factors involved. The pathology and our theory of the effectiveness of this procedure were outlined in detail in our first publication(1).

The most important consideration, however, is the complete reversal of recovery and mortality rate between our non-infusion treated series and our infusion treated group. The infusions act as a nutritive agent rather than a dehydrative agent. Our first series of 16 patients were given 50 c.c. of 50 per cent glucose two and three times a day. This had no apparent effect upon their condition. Therapeutic dehydration is not the important consideration. Rather it is a matter of supplying nutrition and fluids. Nutrition by mouth is not sufficient. Tube feeding in the uncooperative patient will not bring about the same recovery rate that glucose infusions will.

The following cases illustrate some of problems met in this group of patients.

Case 1.—Mrs. E. M., aged 60, was admitted to the Neurological Hospital August 11, 1937. The chief complaint was a rapidly developing irritability, insomnia, anorexia, loss of weight, over-activity and loud and aggressive behavior. At that time we did not recognize the full implications of the symptoms, and we began the usual treatment program which consisted of intravenous injections of 50 c.c. of 50 per cent glucose, sodium iodide intravenously, nursing care and general supportive and hygienic therapy. The patient's symptoms progressed rather rapidly during the first three weeks in the hospital. She then showed marked evidence of dehydration, had lost an additional 15 pounds in weight, and seemed on the verge of collapse and death. In order to provide fluids, daily infusions of 10 per cent glucose were started September 1, in spite of the serious nursing problem. Almost immediately there seemed to be a moderate reversal of symptoms. By September 25 the patient had recovered completely from her psychosis. She was discharged from the hospital October 6, 1937, and remained well for nine months. She had a slight return of symptoms which were corrected quickly at home with the glucose infusions, and she remained well until her death from an automobile accident.

Case 2.—Mr. E. H., aged 79, was referred to us with the diagnosis of psychosis complicating chronic nephritis. He was admitted October 23, 1941 and discharged October 29, 1941. At the time of admission he was markedly disturbed, confused, overactive, giving a history of loss of weight and marked evidence of a typical delirious, hallucinatory reaction. He had been taking large doses of a barbital preparation for some months. His psychosis had developed about two months before admission and had gradually become worse. The drug was stopped immediately upon admission. In 24 hours the psychotic picture was much improved, and 72 hours after admission he had apparently completely recovered. He had only 1 glucose infusion. He has remained completely well since. This is the one case that demonstrated a reversal of the psychotic picture solely by controlling the etiology. It is the only case of this type in our series.

Case 3.—Mr. L. M., aged 65, was admitted September 23, 1941, with a history of nervousness, over-activity, emotional disturbances, loss of weight, insomnia and anorexia. He gave a history of a long-standing nervous disorder which was relatively mild, but for which he had been given a barbital preparation for some time. At the time of admission the barbital preparation was stopped but the patient showed no change in his mental state. Infusions were started and two weeks later the patient began showing a profound change for the better. Four weeks after admission he had apparently made a complete recovery. He was discharged October 26, 1641, and has been back in his shop carrying on his business in a perfectly normal way ever since. He had a total of 30 daily glucose infusions.

Case 4.—Dr. W. O. H., aged 76, was admitted December 15, 1939, with a chief complaint of insomnia, nervousness, mental confusion, disorientation, uncooperativeness, anorexia and loss of weight. Two months before admission he fell and broke his right patella. He attempted to treat himself for this condition after spending one week in a hospital. He continued to practice medicine while wearing a cast, and took considerable drugs in order to control the irritation of the cast. Patient was admitted to a hospital where bed rest was prescribed. The general symptoms of nervous irritability became more pronounced, and about December 1 sedatives were started and the dose gradually increased. In addition to the barbituric acid compound, he was given two ¼-grain doses of morphine sulphate daily.

When it was arranged to transfer him to the Neurological Hospital, it was decided that he should be "knocked out" before the transfer was made. He was given one dose of morphine sulphate without any apparent effect. This was followed with the second dose, which was effective. By the time the patient was admitted his respirations were 2 a minute, he was cyanotic and seemed to be moribund. He was placed immediately in a respirator and kept there until the effects of the morphine had worn off. This case is one of several in our records which illustrate the extreme danger from the use of morphine as a sedative in the acutely ill, psychotic patient. We have had to use a respirator several times to overcome the effects of morphine in such cases.

The etiology of this case was prolonged recumbency and sedation. He was discharged, apparently well, January 19, 1940, and has continued to practice medicine since then in his home community.

CASE 5—Mrs. E. F., aged 71, was readmitted to the hospital August 29, 1940. When first admitted approximately eight months before she had presented the picture of a senile delirium precipitated by drugs. The chief complaints were insomnia, over-activity, mental confusion, disorientation, loss of weight and other evidences of a toxic delirious reaction. This condition followed an operation in which her gall bladder was removed, and sedatives were used to control the restlessness after the operation. She recovered completely from this attack and got along quite well until about August 1, 1940, when she had some teeth removed. The dentist instructed her to stay in bed. Within a very few days she began to show the symptoms of an impending delirious reaction again, but with the history of the preceding attack no sedatives were used. In spite of this, the symptoms gradually progressed in consequence of the bed rest, malnutrition and other complications of the operative procedure. Infusions were quickly started on admission and she slowly but gradually improved. She was discharged October 17, 1940, apparently well and has remained well since.

An analysis of these cases, plus the material outlined above, seems to us to show that these episodes can be prevented by following certain definite principles. No sedatives should ever be given to these patients. Bed rest should not be followed except in cases of dire necessity, and when bed rest is ordered for an older patient glucose infusions should be started at once. If bed rest is necessary, daily or twice daily massage of the dependent parts should help to prevent stasis in these areas. When the condition has developed and the patient has become disturbed and noisy and is disturbing other patients in the hospital, rather than give him sedatives he should be transferred to a psychopathic hospital which is equipped to handle such problems.

It is quite important that the clinician keep in mind the factors of malnutrition and dehydration. The use of vitamins will not correct these conditions. The vitamins must be considered as only catalysts. They are necessary for metabolism, but without food they will not serve any constructive purpose. The diabetic glucose tolerance curve indicates an absence or suppression of insulin secretion. Therefore, we suggest as a preventive measure and as part of the therapeutic program that small doses of insulin be given to these cases, 5 to 10 units three or four times a day. If the person at any time is showing the symptoms of an impending delirium, surgical procedures should be avoided. In preparation for surgical procedures the possibility of delirium should be considered and the general metabolic state of the subject should be built up to an efficient level.

CONCLUSIONS

1. Toxic delirious reactions in older people are quite common.

2. They probably can be prevented if the clinician will keep in mind the special factors in the handling of older people.

3. If a toxic delirious reaction does develop, it can be corrected by glucose infusion therapy. Simple elimination of the etiological factor will not correct delirious states in older people, as it does in younger people, in the great majority of cases.

BIBLIOGRAPHY

1. Robinson, G. Wilse, Jr. Acute confusional states of old age. South. M. J., **32**: 479, May 1939.

2. Robinson, G. Wilse, Jr. Psychiatric geriatrics. J. A. M. A., **116**: 2139, May 10, 1941.

3. Robinson, G. Wilse, Jr. The abnormal mental reactions of old age. J. Mo. State Med. Assn., 36-40, Feb. 1942.

4. Robinson, G. Wilse, Jr. A psychopathological interpretation of the psychiatry of old age. Read before the 97th annual meeting of The American Psychiatric Association, 1941. To be published in the American Journal of Psychiatry.

5. Wartman, W. B. Incidence and severity of arteriosclerosis in organs from five hundred autopsies. Am. J. Med. Sc., **186**: 27, July 1933.

6. Robinson, G. Wilse, Jr., Shelton, Prior, and Smith, Frank V., Jr. Importance of the dextrose tolerance test in the diagnosis of marginal malnutrition. Arch. Int. Med., **68**: 945, Nov. 1941.

7. Muncie, Wendell. Psychobiology and psychiatry. St. Louis, C. V. Mosby Company, 1939.

8. LaPlace, L. B., and Nicholson, J. T. Prolonged recumbency as contributory cause of death in elderly persons. J. A. M. A., **110**: 247, Jan. 22, 1938.

9. Freeman, Walter. Neuropathology. Philadelphia, W. B. Saunders Company, 1933.

10. Riggs, H. E. Personal communication to the author.

11. Sparkman, R. Glycosuria following intravenous administration of glucose. Ky. Med. J., **35**: 355, July 1937.

THE USE OF AMPHETAMINE SULFATE (BENZEDRINE) IN CHILD PSYCHIATRY

LAURETTA BENDER, M.D., AND FRANCES COTTINGTON, M.D.[1]

The present study represents an attempt to formulate the effect of amphetamine sulfate (benzedrine) on children with psychiatric problems, and was stimulated by reports from other workers, notably Bradley(1, 2) and Schilder(3) as well as our own observation of the efficacy of the drug in the treatment of children in the psychiatric division of Bellevue Hospital.

Benzedrine was used in 40 children with all types of problems, and selection of cases was guided only by the difficulty of approach to the child, those children not otherwise accessible to treatment being selected. The drug was given in doses of 10 milligrams for two days, followed by 20 milligrams daily if the reaction to the smaller dose indicated a sufficient degree of tolerance to the drug. In the small children aged five and six years, dosage was begun at $2\frac{1}{2}$ or 5 milligrams. The medication was given in a single dose early in the morning.

The case material consisted of 28 boys and 12 girls, with ages ranging from five to thirteen years. They were classified diagnostically as: psychoneuroses 14; neurotic behavior disorders 16; psychopathic personality 4; organic brain disease 3 and schizophrenia 3. Observations were made before and during medication on activity, aggression, socialization, mood, dreams and fantasy material expressed verbally or through the medium of art productions. This material correlated with the response of the child to individual and group psychotherapy, and with the observations made by teachers and group play therapists. An attempt was thus made to determine the effect of the drug on the specific functions of the child, and its value in facilitating the adaptation of the child in the social environment as well as his realization of his problems.

[1] Read at the ninety-seventh annual meeting of The American Psychiatric Association, Richmond, Virginia, May 5-9, 1941.

From the Psychiatric Division of Bellevue Hospital and the New York University Medical School.

PSYCHONEUROSES

The psychoneurotic group consisted of 14 children, ages ranging from six to twelve years, 3 girls and 11 boys. The intelligence quotient range was from 79 to 138 per cent, the majority being in the low average group. The girls were of superior intelligence and had severe hysterical neuroses. Two boys, each eight years old, were admitted following suicide attempts and had depressions reactive to the death of the father. One boy of 12 years had a severe obsessive-compulsive neurosis, and one boy had a phobia with accompanying fear and anxiety. Six boys were classified as anxiety states.

All the children in this group responded to the drug. Although there was some variability in the observed behavior, the majority became quieter, more cheerful and relaxed, with only occasional swing into their former depression and irritability; they were much better socialized in the group. Two of the girls became tense and irritable, holding themselves aloof from the other girls and making new relationships with student nurses. Two of the boys became increasingly tense, irritable, unable to stand frustration, and withdrew from the group to become dependent upon adults.

The therapeutic relationship with the physician showed sharp modification, two of the children with anxiety states withdrawing from all contact with the therapist, with whom they had formerly been in fairly good relationship. The other 10 became freer to discuss and assist in the solution of their reality difficulties, and to express increased self-confidence and personal security. However, it soon became evident that the subjective experience of a sense of well-being increased their resistance to investigation of their unconscious conflicts and they were less productive in discussing their fantasies and dreams. Aggression against other children in the group was fully expressed in ward activities. Animosity against

parents, teachers and siblings was expressed and discussed in the therapeutic situation.

Relief from tension and temporary escape from conflict and anxiety were also shown in the media of art and fantasy production. The paintings tended to avoid personal issues which had pervaded them before, became more complete in outline, as though effort were better sustained, and the lifting of mood was reflected in the brighter colors used.

CASE 1.—J. T. was an eight-year-old boy with dull normal intelligence, admitted because of a refusal for two years to leave his home to attend school. For a year he had been treated in a child guidance clinic, where evidence was found for a strong persisting Œdipus attachment for his mother, and conflicting fear and jealousy of his rigid, aggressive father. But he had not accepted interpretations, and his behavior remained unmodified. Prior to amphetamine medication he was quiet, asocial, anxious, brought up dynamic material but displayed resistance in accepting interpretation. His art productions revealed his unhappiness and tension, for he daily drew a large black house. His various associations to this theme, made on different occasions, were, "It's a mean house," "It is my house, an old shack," "My house is green, but I paint it this way. It looks this way." (Fig. 1.)

On the first day of medication he twice tried to draw a house, but could not finish the outline. On the following day he painted a red boat and from this time on, his art work was characterized by bright colors and a variety of cheerful themes. (Fig. 2.) During this period he adapted better to group activities and showed increasing drive for school achievement. His fantasy material was characterized by a direct expression of aggression against the father, *i.e.* "Once upon a time there was a father and he was bad and mean and he made his children work very hard. And he ate up all the chicken and only gave them dry bread. One day the boy saw the father hit the mother and he thought she was dead but he found her hiding in the china closet and he was glad." This was like the actual situation in the home as described by the older sister and mother. He was thus now able to deal with these problems in the guise of fantasy, but became irritable at any mention of his attitude toward, or fears for, the mother. He was removed from the hospital by the father before adequate treatment could be given, but returned to his former therapist relieved by a period of freedom from tension, which might be an impetus to his acceptance of further treatment.

In 8 of these 12 cases, the period of benzedrine medication was found to be of help in the solution of the immediate problems and in the adjustment of the child to the social environment, whereas in the other 4 it only served to produce a tension-free period and an evasion of the difficulties to be faced. In the successful cases it shortened the period required for therapy, and is thus a useful adjunct to treatment.

CASE 2.—A negro boy of twelve was admitted because of a sudden onset of complete mutism. Schizophrenia was favored in the differential diagnosis, and no improvement occurred in response to the therapeutic routines of the ward. He responded to benzedrine by beginning to speak in answer to direct questions, by a release of aggressive impulses, and by production of repetitious fantasy material in writing, which dealt with neutral material but opened the way to further therapeutic attempts. In this boy, the effect of benzedrine appeared to be to initiate better social adaptation and to allow freer expression of aggression. There was some externalization of interest, which may have been dependent upon a feeling of well-being. Later treatment with metrazol was carried out, and uncovered hysterical suppression of the function of speech which in his case was on a basis of castration fears.

NEUROTIC BEHAVIOR DISORDERS

Under the diagnosis of neurotic behavior disorders we are considering a group of 16 children reacting with widely variable behavior to incompatibility between the demands of the environment and their own inability to adapt and succeed. In general it may be said that these children are failing in the face of combinations of difficulties rather than in reaction to single ones, and that the adaptation potentials are overwhelmed. These are the usual behavior disorders of children best understood in terms of neurotic mechanisms due to frustrations in the parent-child relationship and associated with anxiety over the child's own aggressive impulses which are expressed in some form of asocial behavior which has finally precipitated rejection from the parents in terms of hospital admission.

Four children, boys of five and eight and girls of six and seven years, presented similar pictures of hyperkineses and aggressive behavior directed toward children and adults. All had been severely rejected by the mother—in one case psychotic and in two cases the only existing parent, and all showed evidence of physical neglect, being underdeveloped and undernourished.

The response of these children to benzedrine was immediate and dramatic. Over-

activity was reduced and the activity became integrated in a more constructive direction. Aggression persisted until the group had accepted the formerly unassimilable child, and gradually diminished in response to the gain in security in the social situation. In play therapy, the lengthened attention span enabled them to work through their problems and reëxperience the aggressive impulses directed against the rejecting mothers and younger rival siblings. The paintings, formerly unintegrated, showed mobilization, and a tendency to use brighter colors.

An additional value of benzedrine therapy in these cases is its use at home following the observation period. The mothers or foster parents are able to accept the quieter child and the circle of hyperkinesis-rejection—neurotic reaction is thus favorably interrupted.

Four eight-year-old neurotic negro boys of dull normal intelligence and severe reading disabilities were given benzedrine in an attempt to stimulate learning drive. Two had associated developmental aphasia, and the lack of impulse toward speech and reading was developmental in origin. In these two boys there was no stimulation of interest in reading or speech problems. The other two, however, showed definite increase in attention span and drive for learning, and made excellent progress with the tutor during the period of medication. Three of these boys had shown fears of threatening forces, preoccupation with destruction by fire and marked confusion about their social relationships. All had broken homes and confusing relationships with adults, and due to their reading disabilities had been unable to compensate through adequate school adjustments. The alteration in fantasy material reflected the solution of neurotic fears through the relaxation of tension and gain in security under benzedrine.

CASE 3.—R. A., a Porto Rican boy admitted because of reading and speech disability and preoccupation with fires, is among these cases. His mother had died when he was three, and was replaced by a stepmother who had a child which she favored. She deserted the home when R. was seven. Both the father and older brother were unable to learn English and spoke a very limited amount of Spanish. R. was thus facing the handicap of a bilingual home, motor aphasia, rejection by the stepmother, sibling rivalry followed by separation from the sibling after an attachment had been formed, and subsequently a complete failure in school adjustment. Due to his difficulty in verbalization, it was necessary to depend upon his spontaneous art productions and his simple associations to them for material. He drew numerous pictures of a mother and her baby burning up in a house or falling from a boat and drowning. The father and himself were sometimes included in this destruction, which was the theme of all of his pictures. (Figs. 5 and 6.) Although benzedrine did not give this boy an appreciable increase in drive for speech and reading, or increase his productive activity or socialization, the release from tension was reflected in his paintings. These now concerned neutral subjects such as snow or clouds, or dealt with aggressive material taken over by pictures from comic books. In these latter he demonstrated some conflict but usually identified himself with a good boy who is shooting a bad boy who sets houses on fire. (Figs. 7 and 8.)

CASE 4.—A. F., an eight-year old negro boy with intelligence quotient of 94, was referred to the hospital for truancy. His father was dead and he lived alone with a mother who worked and who provided an emotionally and intellectually sterile environment. Failing at school, and punished by the mother for his failure, he played truant, his reading disability unrecognized. Two years of failure and ridicule had conditioned him against learning to read. With benzedrine he received a strong impetus to achievement, and made rapid progress with a reading tutor, gaining thereby in personal security. This we have found to be a frequent occurrence in the less complicated cases of reading disability.

Two cases, both preadolescent boys with low average intelligence, in the series represent a type of problem often encountered; deprived and neglected negro boys who respond to their deprivation by truancy or similar overt behavior, but who, because of their attitude of silent withdrawal from adult contact, are difficult to deal with therapeutically. Benzedrine has the effect in these cases of increasing the activity and productivity, although for a variable period they demonstrate aggressive behavior toward other children. As they solve their problems, and with diminution of guilt and anxiety, they gradually adjust to the group, and accept such environmental manipulation as is possible, as well as a more rational attitude toward their own compensating qualities.

The last two boys of this group, T. N. nine and R. P. twelve, were referred to the hospital because of persistent truancy. Both boys were avoiding school on account of the reac-

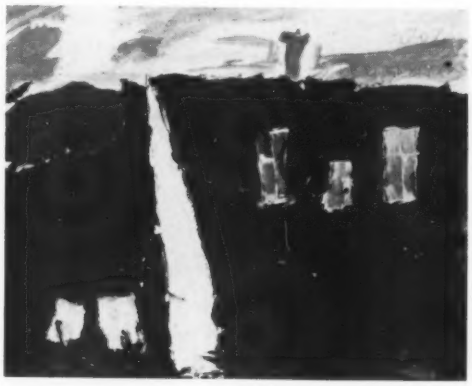


FIG. 1.

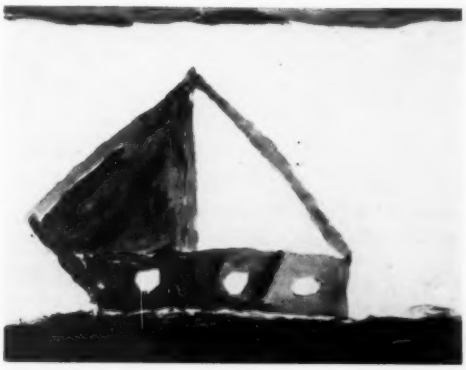


FIG. 2.

CASE 1.—Showing change in theme of pictures during amphetamine administration.

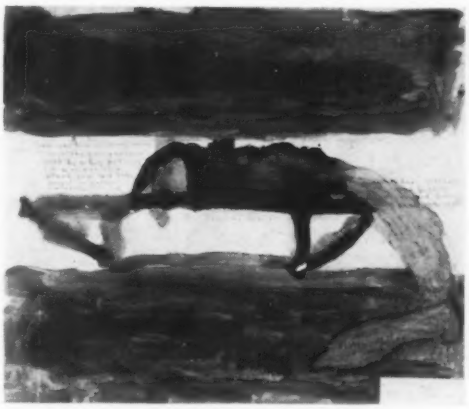


FIG. 5.

FIG. 6.

FIG. 7.

FIG. 8.

CASE 3.—Illustrating a shifting of symbols of aggression and guilt, with solution of the neurotic problem. (See context.)

UNIV. OF MICH.

tion of schoolmates and teachers to their mild physical disabilities. T. was an obese boy with small genitals, and R. had a mild residual right hemiplegia as a result of a birth injury. Both were of average intelligence, but lived with infantile, inadequate parents who had made no effort to realized the difficulties these boys were having. T. was sluggish and inactive, with little drive for achievement. Benzedrine increased his activity and drive, but did not lead to better socialization. R., who had persistently refused to accept his handicap, and resisted all therapeutic attempts, on medication opened up to the physician, discussed his future as a handicapped man, and revealed his past adjustment on the level of complete escape into hero fantasies. He has accepted, at least for the present, more rewarding goals, and consented to removal from his home to a boarding school.

The last girl of the group, J. B., seven, of superior intelligence, was brought to the hospital because of persistent masturbation at home and at school. On the ward she was untidy and preoccupied, and masturbated frequently. Although her mental age was eight and one-half years, she was able to do only beginning first grade work. She had vivid fantasies of sexual relations with boys, described sensations of satisfaction following masturbation, and showed an adolescent interest in the problems of marriage and children. On medication her sexual tension disappeared, and she became less preoccupied, ceased masturbation and applied herself to academic subjects. She was happy, outgoing, and took over the interests of the group. Her sexual fantasies and preoccupations returned with the cessation of medication at home, so that the actual result was a relief from her sexual tension during the period of drug administration.

This result is similar to that described by Schilder(3), in which he states of his patient, "Seemingly the benzedrine gave him a feeling of being loved similar to alcohol. It is a diffuse object-relation which excludes genitality." And in another case, "It substituted object relations at a non-genital level, and increased the narcissistic pleasures in his own body and his energies. Under these circumstances the patient could feel himself loved by himself and others."

Psychopathic Personalities

This group consisted of 4 cases, 3 girls aged six, ten and eleven, and one boy aged ten. Intelligence quotient scores were, respectively, 78, 103, 82 and 85 per cent, and all were without educational achievements. All 4 were illegitimate children, two had been grossly neglected by parents in infancy and 2 had been institution infants, later placed in foster homes. All had failed to make adjustments in foster homes or schools, were without affection for others, attention-demanding, self-centered, and had poorly integrated and unproductive overactivity. They quarrelled constantly with other children and were unable to fit their activities into those of the group. All had frequent temper tantrums and were disturbing to the community because of fire-setting or manifestations of precocious sexual drive.

These children were given benzedrine for two days each (10 milligrams), and demonstrated marked intolerance for the drug. In 2 cases, the dosage was reduced to 5 milligrams for a second two days, with similar results. The unfavorable reactions were shown by emotional instability, irritability, depression and increased tension. Overactivity either ceased or became more disorganized. Aggression against others ceased, but sensitivity to criticism increased and they retired into corners, to sit and cry for prolonged periods. In one case, inner tension was demonstrated by the pitch of the voice, which became high and strained. Fantasies became disorganized and meaningless, or consisted of overwhelming threats in contrast to previous banalities. Art productions ceased in 3 cases, and in the fourth showed total disorganization, with the composition flowing over the background of the pictures.

The impression given by each of these children was that of a personality overwhelmed by the breaking through of the disorganized affects, bringing an awareness of the inner lack of emotional integration and an unexplainable attitude of despair. In the face of this awareness of violent emotions and of lack of ability to direct them into channels which might insure satisfaction, the child is baffled and unable to maintain the superficial integration overlying the disorganization in the emotional sphere. The medication was felt to be without benefit, and in each case the child returned to its former behavior pattern following withdrawal of the drug.

Schizophrenia

This group consisted of 3 cases, boys of twelve and thirteen and a girl of eleven. All were withdrawn, underproductive, with dissociation of affect and thought. All were hallucinated, and the boys impulsive and untidy. All had had symptoms for at least a year prior to treatment.

Benzedrine was administered for eighteen, nineteen and thirteen days, respectively, and produced no change in activity, productivity or socialization. The production of fantasy and art remained as before the administration of the drug. Dream material could not be elicited. There was no evidence of relaxation of the negativism with which these children faced therapeutic and social situations, and such slight increase in activity as occurred in two cases was a continuation of improvement steadily noted before, during and after the period of medication.

Organic Brain Disease—Developmental Brain Anomalies

Three children, boys of twelve and six and a girl of eleven, showing evidence of developmental brain anomalies, were included in this group. All had pathological reflexes and motility, and showed disorders in the sphere of activity and a push of repetitious, monotonous speech. Impairment of memory and judgment and scatter in functions through many age levels were demonstrated in the formal psychometric examinations.

In this group trial periods of three weeks on benzedrine produced no alteration in behavior. The overactivity of the two boys and the sluggish inactivity of the girl were equally unaffected, as was the push of speech. All continued to be rejected by the group, because of their inability to integrate their activity.

Summary

It is our impression from a review of these cases that benzedrine is a useful adjunct to treatment of the neurotic child, in that it gives him a feeling of well-being, and temporarily allows him to feel secure and loved. In this frame of mind he can face his difficulties, express his aggressive impulses without overwhelming fear of consequences, and obtain relief from inner tension and anxiety. The art productions and other means of expressing the fantasy life of these children reflect these processes as they take place. Benzedrine alone does not lead to any but a temporary solution of the child's problems, and must always be combined with a personal therapeutic approach.

In the more severely neurotic child, benzedrine acts only as an expedient to help the child adjust in an environment where he can later find help for his deeper conflicts, and leads to an evasion of these problems during the period of administration. Here, too, the art and fantasy production show an inhibition which parallels the evasion noted in the personal therapeutic approach during medication.

Benzedrine is of great benefit in stimulating interest and drive in learning in the child with a learning disability, providing the original impulse has been obscured through the operation of neurotic mechanisms.

Fear, depression and sexual tension in the child are often completely relieved during the period of benzedrine administration, as is hyperkinesis occurring on a neurotic basis. Activity is frequently integrated and made more productive, and the relationship to the group is thus facilitated.

In the group studied, benzedrine had no appreciable effect upon the behavior of children with developmental brain defects or with schizophrenia and its effect upon the psychopathic personality was in all respects unfavorable. Consequently its use in a controlled ward set-up may be an aid in the differential diagnosis of some obscure problems. It has also clarified our concepts in regard to the classification of behavior problems in children as they are here described. However, it is worth emphasizing again that the successful use of this drug in the behavior problems of children depends on a clear understanding of the causes of the child's problems, the proper choice of children to receive the drug, and the use of the drug only as an

adjunct to adequate personal psychotherapy, tutoring and social adjustments.

BIBLIOGRAPHY

1. Bradley, C., and Bowen, M. School performance of children receiving amphetamine (benzedrine) sulfate. Am. J. Orthopsychiat., **10**: 782, October 1940.

2. Bradley, C., and Bowen, M. Amphetamine (benzedrine) therapy of children's behavior disorders. Am. J. Orthopsychiat., **11**: 92, January 1941.

3. Schilder, P. Psychological effect of benzedrine sulfate. J. Nerv. and Ment. Dis., **87**: 584, May 1938.

PSYCHOLOGICAL ASPECTS OF HOBBIES

A Contribution to Civilian Morale

WILLIAM C. MENNINGER, M.D., Topeka, Kansas

In our present national emergency, healthy civilian morale is an extremely important factor in pressing our war efforts. At a time when every ounce of energy and every minute of time should be devoted to increasing production it may appear paradoxical to be urging the cultivation of hobbies. But high pressure production, longer hours, night shifts, increased responsibility will all add extra stress to each personality with resulting tension and fatigue. With tire and gasoline rationing, not to mention air raids, many people will be spending more evenings at home and most of us will be deprived of our week-end auto trips and summer vacation tours. Even at present most individuals are aware of a feeling of unrest and mild anxiety; of some degree of personal and economic insecurity; of concern regarding some member of the family or close friend in the armed forces. These feelings are much less noticeable during the active working hours of the day than during the leisure hours. Most individuals will have at least some leisure time when the need for relaxation, escape and re-creation will be even greater than under normal conditions. If this time is utilized by the individual for his own maximum benefit in a constructive and intelligent manner, his daily work may be much more efficient and his own morale supported and sustained.

Guidance in the development and maintenance of morale is largely a psychological problem, towards the solution of which psychiatrists should be and are contributing. Pointing out the four most effective methods of maintaining morale, Masserman(1) listed the "organizing, enlarging and employing as efficiently as possible the social, educational, and *recreational* public service agencies to meet the greatly increased war-time needs of the populace." In the third of a series of guides for civilian defense personnel training on *Fatigue: Importance and Control,* compiled by the Military Mobilization Committee of The American Psychiatric Association, it is stated that of two fundamental ideas, "the first is that the individual is not a machine. A certain amount of recreation as well as rest is absolutely necessary. Recreation means doing something which is different from your work and which you enjoy doing. It should be so different from your work that while doing it you will forget your work. This matter of being able to forget your work is the real value in recreation." Both these statements, while generalities, indicate psychiatric opinion as to the importance of leisure time activities in civilian morale.

The psychological analysis of leisure time activities, despite their importance even in normal times, has received scant scientific attention. To the writer's knowledge, except for a recent number of the Menninger Clinic Bulletin devoted to the subject, there is no psychiatric analysis of hobbies in medical literature. Since hobbies are recognized as being of benefit to the mental health of the individual and consequently of importance to civilian morale, their scientific study should provide a more intelligent approach to their introduction to a greater number of individuals. For most of us hobbies, like Topsy, "just grow." But if we had a more accurate evaluation of their varied contributions to personal development, the psychological motivation, the methods of providing satisfaction, it is possible that many intelligent individuals would be led to adopt one as a part of their mental hygiene, just as we have accepted fresh air and exercise as a part of our physical hygiene. Many more persons might be provided intelligent guidance into such activity.

Types of Constructive Leisure Time Activity

Leisure time or recreational activities encompass a wide variety of human behavior, and except for those especially interested in

this field, few are aware how extensive it is. For this reason certain natural groupings of these activities may be helpful for orientation to the field:

1. *Creation:* the making of objects—graphic arts, music, crafts, gardens, writing, composing and all their variations.

2. *Collection:* Calkins(2) lists over 300 types of objects which are presumably collected commonly, the most common of which are books, paintings, prints, stamps, coins, glassware, guns, antiques.

3. *Acquisition of knowledge and skill:* (other than that dealing with one's vocation) including music, science, travel, reading, nature study, etc.

4. *Action in competitive sports and games:* athletic contests, card games, chess, checkers, etc.

5. *Action in non-competitive sports and games:* gymnastics, dancing, hiking, hunting, fishing, sailing, puzzles, dramatics, cooking, etc.

6. *Visualization and audition as a spectator:* at athletic contests, cinema, dramatics, music, etc.

7. *Socialization:* (requiring group participation) including civic and community work, clubs, lodges, religious activities, social work, etc.

Any attempt to classify all the variations of leisure time activity would be an attempt to classify all human activity. It is apparent that many activities might fall under several of the above headings and that different phases of the same activity might be the major interest of different individuals. Thus, music may be creation for one who composes; collecting, for one who builds a library of recordings; certainly it is the acquisition of knowledge and skill for all who study it; it is used competitively and non-competitively, and is a major spectator activity.

The designation "leisure time activity" is too general and too inclusive to evaluate psychologically in this presentation. The term hobby is more specific and limited and it is more satisfactory for our present purpose since it always implies investment of interest and energy in the particular leisure time activity. The definition given in the dictionary is somewhat unsatisfactory as interpreting present usage of the word. A hobby is described as "something in which one takes absorbing interest," but the word has come to mean much more than this. It is an activity in which the participant gains assured satisfaction in excess of that gained in most other lines of activity. The term implies a very distinct and sharp difference in the type of this activity, as contrasted to his vocational interest. The word *hobby* further carries the implication of satisfaction to be gained from the activity itself rather than from any secondary advantages such as monetary gain or utilitarian value, thus distinguishing it from an avocation in which the economic gain is of importance.

Psychological Origins

To discuss the origins of all hobbies, like classifying them, is tantamount to discussing the psychological origins of all human interests. Nor do the various theories as to the origin of play summarized by Mason and Mitchell(3) and Britt and Janus(4) give us practical help in understanding the original motives in various hobbies. The particular benefits or secondary gains from a well developed hobby may have little if anything to do with its initial choice by the individual. The popular notion that a hobby furnishes a person the opportunity to escape from the stress and strain of his vocation is very likely true, but does not shed light on the reasons why that person made the choice of that hobby into which to escape.

The wide range and variety of activities regarded as *hobbies* will include major or minor influences derived from every stage of psychological development. One may regard all hobbies as forms and hence as modifications of play by refinement, complex development and addition of increased intellectual activity. The baby's first satisfaction seems to be entirely an auto-erotic one produced by muscular and skin sensations, appearing as kicking, arm waving, bouncing or bubble-blowing. Shortly, these activities are replaced with jumping, rolling, tumbling, rhythm games. These original satisfactions from physical activity may not be unrelated to a similar type of satisfaction gained from athletic activities, hiking or dancing. In the nursing phase of development when getting

food is the all-important activity in the child's life it is apparent that his greatest satisfaction is derived from the incorporation of his environment—not only of his food and the nipple, but of everything that comes into his hands. Although initially acquired in infancy, this acquisitive habit, the desire to make things a part of himself, to possess, is an important attribute in the satisfaction in many types of hobbies. During the toilet training period, before the child has learned control, his experiences may be the prototype of the satisfaction found in painting and writing; and from the later part of this period when he has learned to "hold on" to his excreta, he may derive his collecting interests. The final psychological period of growth is marked by the satisfaction from creative activities. To classify all hobbies according to specific type of satisfaction first gained (*e.g.*, a particular stage of infantile psychosexual development) is unsatisfactory, because the origin and meaning of a hobby for a particular individual is like his dreams, understandable only in terms of his own development and present situation, and because almost any hobby may vary widely in the way it is utilized by different individuals. Using stamp collecting as an example, one individual may find his chief satisfaction in the acquisition; another obtains it in accumulating; for another it is the opportunity for organizing and cataloguing; for still another, the opportunity to create—to "write-up" and study his stamps. Or, most important, one person may find satisfaction in all of those activities.

One might postulate then that the origin of a hobby is in some special mode of gaining satisfaction permitted in infancy, which in the process of growing up, is initially forbidden by the parents and society and then by psychological forces within the individual himself. The ego forces the mode to be deflected from its original aim and modified to meet social approval. All hobbies, then, represent sublimations. In addition to energy from the erotic drive, many hobbies provide an outlet for the aggressive drive in varying degrees. These aggressive elements are more obvious in activities involving physical effort like athletics, hunting, gardening, boxing, wrestling, and they are also given healthy expression in competitive sports and games.

Assuming that hobbies are refined forms of infantile play, it is curious that well developed and lasting hobbies are not more common. In other words, it is more difficult to determine why all individuals do not have hobbies than it is to determine why they do have them. One might speculate that in some persons without hobbies, prohibitions or frustrations in childhood prevent the development of any predominant mode of obtaining satisfaction, or, on the other hand, that direct satisfaction from excessive overt sexual play (as in a phallic character) has made other forms of gratification unnecessary.

One may speculate further that unknown or unrecognized environmental factors have limited in some individuals the amount of available energy that can be directed towards or is free to attach to objects. There results a kind of helplessness, an apparent poverty of interests, and the necessity for passive (non-participating) amusement or recreation. This situation may arise in an instance where the individual's sense of insecurity consciously, or more often unconsciously, demands that he seek constant reassurance and this is gained only through passive participation in groups, attending the theatre, going to parties, constant visiting or entertaining. In lay terms this type of individual doesn't know what to do with himself, unless entertainment is provided or arranged for him—through groups of friends, picture shows, entertainments. Occasionally certain individuals who choose this type of passive amusement may develop certain features of it into an active hobby. They develop special intellectual interests in actors or dramatic techniques. In sports they tabulate records, discuss, compare, bet on scores, construct all-American teams. Possibly many people, particularly in this country, accept passive forms of recreation because of the relatively high degree of competition in our daily lives. Spectator sports permit not only the acceptable expression of the passivity latent in every one, but even more important, they provide vicarious aggression.

There is another type of individual who takes a transient interest in whatever activi-

ties happen to be the fad at the time, whether it be Mah Jongg or Yo-Yos. Undoubtedly there are many people who might claim to have a hobby but whose activity is forced in order to conform to group pressure and thus is carried on to protect themselves from being regarded as inadequate or "different." Perhaps because hobbies are intuitively recognized as modified infantile play, there exists for many individuals a restraining factor against the active participation in one. Many persons pursuing a hobby exhibit an unusual modesty or reticence in referring to it and may present even an apologetic or shame-faced attitude when questioned about it. This attitude may sometimes be traced to parental moralistic concepts that play and recreation are forbidden as a waste of time and demoralizing. Thus to play is to disobey the parents, and, if carried out, must be done secretly and with the consequent guilt reaction. In these respects it is like masturbation.

The development of a hobby presumes that at some appropriate time the individual will be exposed to the opportunity of reviving his infantile methods of gaining satisfaction in a socially approved way. In a few instances it is probable that such an exposure might not take place, either because of lack of leisure time or because of economic difficulties, or both. Thus in a tenement district it is conceivable that an individual might have only minimal opportunities to be adequately exposed to hobby formation. In rural areas and small towns, avocational guidance and recreational facilities are rare. Similarly in a family where work is the order of the day from early morning until late at night there might be no opportunity for exposure. Perhaps in any disorganized family situation whether it be due to a broken home, parental discord, economic pressure, nomadism, minimal cultural or recreational interests, the opportunities for exposure to hobby formation are unlikely. However, all these situations in which there may be a failure of exposure are the exceptions and one must seek further for the explanation as to why a great many individuals do not and never have had hobbies.

The influence of available leisure time in promoting the development of a hobby is questionable. In the settlement of America, the survival of the fittest demanded constant toil, and play was frowned upon and actually forbidden by certain religious groups. With the coming of the machine age leisure time became more available to a larger number of people. Studies in delinquency and crime such as that of Sheldon and Eleanor Glueck (5) have indicated that unused leisure time is a major factor in the origin of many offenses. The use of leisure time in various national cultures has varied: in Switzerland, wood carving began as a pastime and became a business; in Hungary the folk dances became the national pastime; in Austria hiking and petit point developed; in Holland, bicycling. And through Europe even the poorest classes enjoyed the opera, the art galleries, the music of the masters. In America perhaps because we have much more wealth, less cultural heritage and a larger rural area, the great mass of individuals invests its time in motoring, moving pictures, nickelodeons, radios, comic papers, tabloids, pulp magazines.

Stuart Chase (6) computed that one-fourth of our national income was spent in these ways in 1928. On the other hand there has probably been an increase in hobbies, particularly in games and sports and crafts as the result of the concerted efforts in many communities to organize playgrounds. According to Rogers (7) of the Playground and Recreation Association of America, in 1906 forty communities were making some provision for community recreation, and in 1930 one thousand communities were providing such service. This has undoubtedly been increased since then, and during these same years many organizations such as the Boy Scouts, Girl Scouts, Campfire Girls, 4-H Clubs, and Future Farmers, have come into being to increase the opportunities for exposure to hobby formation.

One must conclude that lack of sufficient time is a rationalization for the average person in our present day society to explain his lack of having a hobby. Many individuals cannot organize their time nor use it when available. The fact that one has leisure does not necessarily indicate any increased capability to direct activity into con-

structive channels. But the right type of leader, using the right type of media (as in recreational organization) may induce an individual with newly discovered (leisure) time to develop a hobby. Or, again, an individual who is forced to accept leisure time without any available outlets, may develop a creative activity merely because he has been thrown upon his own resources. An example is the remarkable handicraft creations of the seamen of the clipper ship period—an uncultured and often an almost illiterate group. A recent dramatic example is the increased hobby activity by Londoners who have been forced to remain at home by the danger of bombings. Judged from the demand for books, reading has increased greatly. The British philatelic press has reported a very marked increase in stamp collecting and in the number of collectors. This increased activity and interest probably extends to other hobbies which cannot be estimated so easily.

Undoubtedly an educational and cultural childhood background is a powerful influence in the development of hobby formation. Such an environment provides increased exposure to music, literature, art, crafts, science, travel, coupled with more leisure time to participate in such activities. The example set by the parents is an important factor in the development of hobbies, and it is well recognized that the child growing up in a home where the parents have engaging leisure interests develops them himself. Regardless of the environmental situation, the capacity for the development of hobbies seems graded, and this capacity seems to diminish as the years progress so that it is the exceptional instance where an individual in middle or late life who has never learned to play, develops a hobby.

Most ardent hobby lovers have given indication of their potential hobby interests by late adolescence. The individual who fails to initiate a hobby after that age often takes the attitude that many hobbies seem to be "queer" or strange behavior for an adult; in fact, the ardent hobbyist is often regarded as eccentric. Insofar as the activity is beyond the observer's grasp in interest and understanding, the hobbyist and his attitude and his behavior towards his hobby appear symptomatic of abnormality. There is no doubt valid evidence that a hobby may most vividly express an individual's "queerness." It may be that in some instances his hobby is a major defense in maintaining his adjustment to life. Hobbyists recognize that they are regarded as eccentric; even among themselves they facetiously refer to their hobby interest as a "disease." A nationally known ornithologist with a wide acquaintance in his field indicated, in a personal communication, that he believed that all advanced bird students either were or had been maladjusted. Insofar as a hobby is an aid against maladjustment and its ardent pursuit an evidence of behavior outside the "average range of normalcy," he is probably correct, not only about bird students but about all hobby enthusiasts. This leads us to consider the psychological motives in hobbies.

Motives in Hobby Formation

Hobbies undoubtedly give each individual secondary satisfaction apart from their unconscious sexual or/and aggressive aims. Because they are a reliable source of satisfaction and because of their freedom from compulsory responsibility, hobbies do furnish an individual a release of and relaxation from tension. This commendable, even though superficial reason, is the conscious argument used by the average ardent hobbyist to justify his activity. He may cite the fact that President F. D. Roosevelt is said to take a few stolen minutes each day even during the present crisis to "work" at his stamps; or that the late Dr. John Findley, former editor of the *New York Times,* was an ardent hiker; or that Charles P. Steinmetz devoted all his spare time to his cactus collection; and that a legion of others have found solace and satisfaction and renewed energy in their hobbies. As such they probably serve the individual as a morale builder and constitute an important factor in the maintenance of good mental health.

The empirical observation that recreation and occupation are of therapeutic value in mental illness led to their usage in most psychiatric institutions many years ago. Utilizing our increased knowledge of the personality we have attempted(8) to apply them in a more scientific method to correct specific

disturbances in the erotic and aggressive drives of our patients. Most psychiatrists would agree with Bassett's statement(9) that "the great majority of patients, both children and adults, who pass through clinics for the study and treatment of behavior, nervous and mental disorders, are characterized by physical timidities and fears, a marked paucity of genuine interests, *a lack of healthy recreational activities* (italics mine), an inability to make friends, and an undeveloped sense of social values and social cooperation. The encouragement of adequate recreational activities in childhood may play a very important part in the prevention of these conditions." Mower(10) attempted to evaluate the importance of hobbies in the mental health of the individual. In a survey of 40 psychiatric patients contrasted with a similar number of doctors, nurses, therapists and stenographers, he discovered that the members of the control group of presumably normal individuals seemed better able to seek out and select hobbies with far greater frequency than members of the maladjusted group. Furthermore, the so-called normals displayed a greater aggressivity in the pursuit of their hobbies, as well as carrying them out over a greater span of time. The findings suggested that the greater number of interests and the amount of time spent might be some indication that a larger amount of energy to invest was available in the normal group than in the maladjusted group.

Hobbies undoubtedly serve in many instances as compensations for fancied or real inadequacies and often probably quite consciously to the individual. To become expert in a particular field of knowledge or activity, to develop superior skill, to acquire a large number of objects in whatever field the individual may collect, may in many instances be a compensation for some inadequacy in some other field. Sherman(11) apparently regarded hobbies as always being compensations, usually for feelings of inferiority. In some instances this is undoubtedly true, but this explanation does not tell us why some people are able to handle inferiority feelings in this manner while many others are not.

The aggressive elements provided by hobbies have already been mentioned. The importance of the satisfaction gained from this unconscious factor cannot be over-stressed. There are aggressive outlets in every type of hobby, and in fact the aggressive element may be the most important unconscious gratification obtained. Any hobby, insofar as it resembles play, may represent the forbidden. Much play is the carrying out of forbidden activity, and derives its fascination from defying parents or society. Direct outlets for aggression, however, are apparent and conspicuous in any competitive activity —whether this be chess or tennis, "tactics" (a new table war game) or football. The aggressive element is apparent in those crafts in which there is pounding (hammered brass), jabbing (hooked rugs), cutting (wood carving), smearing (finger painting). In war time the aggressive feelings of the public are mobilized toward the enemy and as a problem for civilian morale they need purposeful outlets in the present emergency. Most of us are aware of a special desire to be doing something, to keep busy, of wanting to help. The organization of civilian defense units, emergency service corps, raising money for the Red Cross, or selling war saving stamps, attending classes for civilians in First Aid, rifle and pistol shooting, etc., provide partial outlets. The constructive effort to develop hobbies is an equally valid outlet in building morale. For example, even so simple an outlet as knitting is sufficiently satisfying with its feverish motion of needle jabbing to become widely popular over night.

Various hobbies are of special satisfaction to the individual because of their entirely unconscious symbolic value. This is most obvious in such an example as the childless person's interest in his pets. Perhaps all hobbies gratify the individual in some degree, through their quality of unconscious symbolization. No doubt this is often accomplished in minor aspects or characteristics of the hobby rather than the hobby as a whole. Charles Steinmetz was regarded as an eccentric, was physically small and hunchbacked. He developed a special interest in rare, spiny cacti, and a collection of bizarre, odd-shaped plants, which perhaps had a direct, though unconscious reference to his own body image.

Hobbies may be motivated also by the individual's desire to introject or incorporate, through visual, auditory and oral methods. We "drink in" beauty with eyes and ears;

we "feast" on the wonders of nature and works of art; we "consume" the printed pages of novels or poetry; we "digest" intellectual and scientific presentations. In other instances, our satisfaction is derived from conscious (and unconscious) projection: we write our lives in books and gardens; we build ourselves into the lives of boys and girls (in social hobbies like Scout or YMCA work); we put our souls into marble busts or onto canvas; we imprint our personality in our stamp collection by our arrangement and study.

The initiating influence in many hobbies may be the unconscious process of identification. This is particularly apparent in the child's adoption of his parent's interest, in part to make the *identification* and, in part, to adopt the hobby for the sake of gaining approval. This device is carried out in many hobbies by making ourselves one with the group, perhaps initially the family group, and subsequently with a club or other organization. Although there are many hobbies which can be carried out individually and in a solitary fashion there are very few which are not enhanced by the appreciation of others, as well as sharing and working with those with the same interest. In every well developed hobby field, there are local and national organizations and publications. For example, there are no less than 75 periodicals devoted to "postage stamps" in the United States alone. In not a few activities maximum satisfaction is gained from the participation of the individual with a group, such as in many types of games, sports, politics. In social hobbies, like lodges or Boy Scout work, the group is a prerequisite to carrying on the activity.

Many hobbies provide part of their gratification through their unconscious outlets for compulsive activity. Many individuals are consciously aware of their urge to keep busy, to be doing something. Forced idleness increases their restlessness. Many such persons are aware of a strong necessity to busy themselves with "fixing things": straightening the curtain, closing the closet door, evening up the window blinds, emptying the ash trays, etc. This type of activity is given an outlet in those hobbies which permit special emphasis on arrangement, completeness, precision, promptness, symmetry. A major portion of the satisfaction gained may come from the gratification of these compulsive needs. Again, stamp collecting serves as an example: some individuals are "compelled" to complete a set, to fill an "empty space," to find a very particular specimen. Others find their greatest enjoyment in the arrangement and the symmetry of the album page. Still others find their satisfaction in cataloguing, marking lists, tabulating what they have or what they need. To the uninitiated casual observer this feeling of absolute necessity to carry out any of these procedures seems queer, ridiculous, mysterious or amusing, depending on his relationship to the person or his familiarity with the hobby.

In summary, psychologic and psychiatric findings indicate that hobbies serve as an aid to personality-environmental adjustment. They are more common and are pursued more intently and over longer periods of time in well adjusted individuals. There is little doubt that, as an aid to adjustment, their value is increased during periods of mental and physical stress. Consequently their energetic development in individuals and groups may advisedly be used in building and maintaining civilian morale. Some scientific speculations have been set forth as to types and origins of some of the gratifications obtained through hobby activities. It has been suggested that the failure to develop a hobby may in most instances be traced to faulty social structure in the family of the particular individual, or it may be a defective personality development. Various motives for hobby formation, namely compensation, aggressive outlets, symbolization, identification, have been discussed. There seems little doubt as to the beneficial effect of a hobby on the mental health of the individual, though it cannot be proved that the hobby may not be the result of good mental health rather than the cause.

Walter Pitkin's(12) advice to the layman regarding hobbies is not couched in scientific terms but it is in agreement with scientific findings: "To find yourself in leisure and to achieve the well balanced life, pay no attention to what other people tell you to do, or what you think you 'ought' to do. Above all, don't seek everlasting self-improvement.

Learn rather to enjoy yourself. Find out how to play. Take nothing too seriously, least of all yourself."

BIBLIOGRAPHY

1. Masserman, J. H.: Report of Chicago Civilian Defense Committee on Public Morale, 1942.

2. Calkins, E. E.: Care and feeding of hobby horses. Introduction by Walter Pitkin. Published by Leisure League of America, J. B. Lyon Co., 1934.

3. Mitchell, E. D., and Mason, B. S.: The theory of play. A. S. Barnes & Co., New York, 1935.

4. Britt, S. H., and Janus, S. Q.: Towards a social psychology of human play. J. Social Psychol., 13: 351-384, 1941.

5. Glueck, Sheldon S., and Eleanor T.: Five hundred criminal careers. Knopf, New York, 1930.

6. Chase, Stuart: Chapter on recreation in Whither mankind. Charles Beard, Editor. Longmans, Green and Co. 1928.

7. Rogers, James E.: Twenty-five years of progress in recreation. School Life, U. S. Office of Education, March 1932, pp. 126-27.

8. Menninger, W. C.: Psychoanalytic interpretations of patients' reactions in occupational therapy, recreational therapy and physiotherapy. Bull. Menninger Clinic, 1: 148-157, May 1937.

9. Bassett, Clara: Mental hygiene in the community. Macmillan Co., New York, 1934.

10. Mower, James W.: A comparative study of hobby activities, Bull. Menninger Clinic, 4: 82-87, 1940.

11. Sherman, Mandel: Mental hygiene and education. Longmans, Green and Co., New York, 1936, pp. 172-74.

12. Pitkin, Walter: Introduction to Care and feeding of hobby horses. Leisure League of America, J. B. Lyon Co., 1934.

FLUCTUATIONS OF BLOOD IODINE IN CYCLIC PSYCHOSES[1]

RUDOLPH NEUSTADT, M.D., AND L. GLADYS HOWARD

Boston, Mass.

The present study was undertaken to determine whether or not the affective changes in manic-depressive psychosis are accompanied by changes in blood iodine. As it is difficult to measure thyroid activity in psychotic patients by means of the more common clinical procedure, *i.e.*, the determination of basal metabolic rates, the study of the organic and inorganic iodine in the blood reveals the state of thyroid function accurately without requiring much cooperation from the patient.

However, the determination of small quantities of iodine in organic material, as in blood, has not yet reached a state of perfection. There is still the controversy of "acid" or "alkaline" and of "open" or "closed" ashing methods(1). Each of these methods applied to the same specimen of blood would yield different amounts of iodine. Salter(2) states that the same specimen examined at different laboratories yielded from 7 to 70 gamma iodine. Therefore, we cannot compare results obtained in different places or by different methods, but at present we must be satisfied if every investigator of blood iodine knows the fallacies of the method employed by him, knows the method's normal range and obtains constant results.

The method used in this laboratory has been described by Perkin(3) and Perkin and Cattell(4). We adhered strictly to the directions given by the authors, except for one minor change, *i.e.*, the purification by distillation over copper sulfate of the bromine used. Through this purification we obtained permanently very close checks which were not obtainable prior to the introduction of this change. All figures used in this paper are from samples treated with purified bromine; all samples were run in duplicate.

The redistillation of the bromine also had the expected effect of a general lowering of the values obtained. While with ordinary bromine the range of our normal controls is close to the figures given by Perkin it will be shown later that with purified bromine the average in normal controls is only about half as great. Consequently, all figures in this paper are lower than those with the original Perkin method. Thus, this paper follows the present general trend towards lower blood iodine values.

We were unable to find any literature directly related to the subject. Although the number of biochemical examinations in manic-depressive psychosis is great there have been no examinations for blood iodine (5). Only one paper was found which is relevant to our examinations(6). The authors studied the influence of affects upon blood iodine, but they do not state what kind of affects they evoked in their experimental subjects after they had brought them into hypnosis. Thirteen of 15 of their subjects showed increased blood iodine of more than 20 per cent after an affect. In 5 persons the blood iodine was back to normal 1½ hours after the artificially produced affect-state was ended, while 8 persons showed longer-lasting increases, mainly when the initial increase was 50-100 per cent. The interesting finding of these authors is that there is a parallelism between affect-stimulation and increased blood iodine but no parallelism between the end of the artificially produced affect and the decline of the blood iodine.

Clinical Observations

This is a preliminary report of approximately 140 samples of blood in which the iodine was determined. The examinations were carried through during the winter months 1938/39 and 1939/40. Since then a slightly different method for ashing the material has been used, therefore it seems justifiable to publish the first group of our data, although small, separately as they may not be strictly comparable with later results.

All patients examined were on the regular

[1] From the Division of Psychiatric Research, Boston State Hospital, Boston, Mass., aided by a grant from the Commonwealth of Massachusetts.

hospital diet which varies little from week to week and the majority of them had been on the hospital diet for many months prior to the examination. Dietary influences were excluded as much as possible by selecting always the same day of the week (either Monday or Thursday) for withdrawal of the blood from each patient. As the majority of the patients were uncooperative because of their psychoses we did not insist upon fasting patients, but took the blood 2½-3 hours after they had had a light breakfast.

There was no iodine medication, no iodine application and all outside contamination with iodine was avoided.

TABLE I

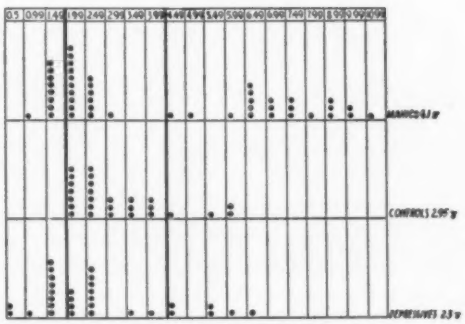


Table I shows the distribution of blood iodine values in a group of normal controls as compared to a group of manic and a group of depressed patients.

Several patients were examined repeatedly over long periods of time, while the majority was accessible for examination only a few times.

We found in a control group of normal individuals from whom 27 blood specimens were obtained that all blood iodine values were within close range—over 85 per cent of all values were between 1.5 and 4.0 gamma per 100 cc. of blood, while only 4 specimens in this group showed higher values but not more than 6.0 gamma per 100 cc. of blood. The average of the control group was slightly under 3 gamma (2.95 gamma iodine per 100 cc. of blood). (Table I.)

In a group of manic patients quite different results were obtained. The 47 specimens in this group showed a wide range from 0.8 to 10.8 gamma iodine per 100 cc. of blood (Table I). Eighteen per cent of all cases in this group were lower than the lowest values in the control group (1.5 gamma or less), while 36 per cent were over 6.0 gamma, the highest value obtained in normal subjects. In spite of this great range there were no gross clinical signs of endocrine disturbances; no signs of myxedema in the very low and no signs of hyperthyroidism in the very high groups. Furthermore, there were no obvious differences in the psychiatric symptoms linked with the two groups of very high and very low iodines. Further study may reveal the reasons for the two different groups of iodine levels amongst the manics and whether or not these differences are of prognostic or diagnostic importance.

It will be seen that only 40 per cent of all manic cases had iodine values in the middle range from 1.5 to 6.0 gamma per 100 cc. of blood. In the group as a whole, the high values were preponderant and the average of the manic group is 4.1 gamma iodine per 100 cc. of blood or 40 per cent higher than the average in the normal control group.

Thirty specimens from depressed patients were examined (Table I). Here again we found a greater range than in the normal control group. However, the very high values (6.0 gamma or more) were absent, the preponderance was toward the low side and 36 per cent of the depressives had very low iodine levels (1.5 gamma or less). The average in the group of depressed patients was 2.3 gamma iodine per 100 cc. of blood or approximately 25 per cent lower than in the controls.

The average in the manic group is not only nearly 40 per cent higher than the average in the control group but about 80 per cent higher than the average in the depressive group. Common to both groups is the fact, that they have a greater range in blood iodine than the normals, with the depressed patients showing a preponderance toward low values and the manic patients showing a preponderance toward high values. *Thus, group differences became apparent.*

As stated above, we were able to follow the changes of blood iodine through definite long periods during the course of the psy-

chosis in 9 individual cases which are given in brief here:

CASE 1. (Table II.)—This is a patient of about 50 years of age who had her first attack of manic-depressive psychosis, with hospitalization for six months, at about the age of 32. The patient was hospitalized for about 18 months prior to examination. At the time of the first blood examination the patient was kept continuously in the bath-tub as she was quarrelsome, noisy, aggressive, screaming, singing, exhibiting motor excitement, flight of ideas, outbursts of anger and manic elated mood—the typical picture of a severe manic excitement. The blood iodine, at that time, was 6.6 gamma per 100 cc. of blood. One week later, her psychotic state was unchanged, her blood iodine was 6.4 gamma per 100 cc. of blood. There was no change in the state of psychosis during the next week; the blood iodine was 8.0 gamma per 100 cc. Three weeks later a slight improvement had taken place, but the patient was still in the tub daily; her iodine was 6.0 gamma per 100 cc. of blood. A definite improvement took place during the following week; the patient was out of the bath, she was manic-elated, happy, had flight of ideas and motor excitement, but was less aggressive and less shouting; her iodine was 2.4 gamma per 100 cc. of blood. One week later she had relapsed into her previous more severe state; the iodine was 8.0 gamma per 100 cc. of blood. For the next three months there was no change in her psychiatric condition; the iodine stayed high at 8.0 gamma per 100 cc. Six months after the beginning of our examinations the patient was slightly improved but still in a typical manic state; her iodine at that time was 6.0 gamma per 100 cc. blood. Another sample of blood was examined five months later, or eleven months from the time the examination was begun. In the meantime, a complete change had taken place; the patient had become quiet and had gained weight. She was slightly depressed at this time; her blood iodine was 2.0 gamma per 100 cc. A few months later the patient was dismissed from the hospital and in her normal condition. No further iodine examinations were made.

TABLE II

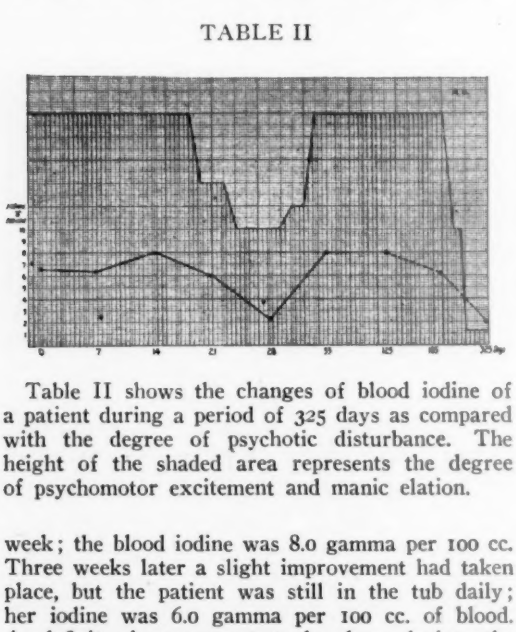


Table II shows the changes of blood iodine of a patient during a period of 325 days as compared with the degree of psychotic disturbance. The height of the shaded area represents the degree of psychomotor excitement and manic elation.

A second case, a girl of 23 years, presented a similar course and corresponding findings.

CASE 3.—The patient is a girl of 14 years of age. She became acutely ill in February 1940 with a severe manic psychosis which lasted exactly 11 days after which she was recovered completely and discharged from the hospital. She had a second manic attack with sudden onset in March 1940, was hospitalized on the third day of this episode and the first blood was withdrawn on the tenth day; the blood iodine was 2.0 gamma per 100 cc. On the seventeenth day after the onset of the second attack, she was dismissed and completely recovered; on this day the blood iodine was 2.8 gamma per 100 cc. Exactly three weeks later—or 38 days after the onset of the second attack—she became ill for the third time with sudden onset. She was hospitalized two days later and examined the next morning; the blood iodine at that time was 1.8 gamma per 100 cc. Six days later her psychiatric condition was unchanged—manic elation, motor excitement, happy, gracious manner, flight of ideas, etc.; the blood iodine was 2.0 gamma per 100 cc. One week later she had again completely recovered; the blood iodine at this time was 2.8 gamma per 100 cc.

TABLE III

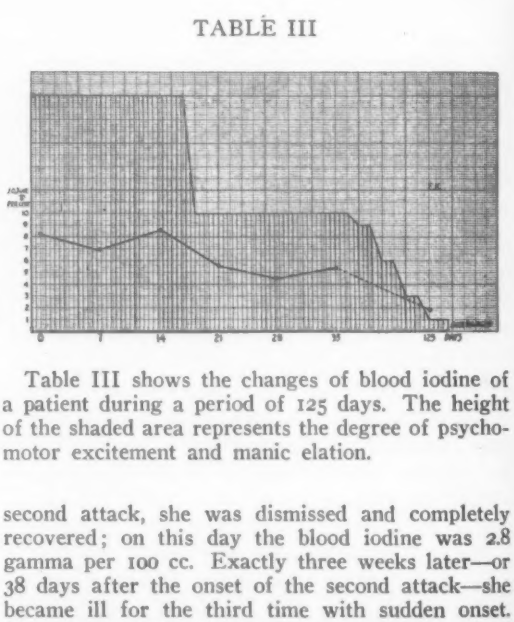


Table III shows the changes of blood iodine of a patient during a period of 125 days. The height of the shaded area represents the degree of psychomotor excitement and manic elation.

The blood iodine in this case does not follow the same pattern as in cases 1 and 2. This girl shows no elevation of her blood iodine during the manic episodes, and the blood iodine is even somewhat higher following recovery from each attack. Although there was nothing unusual or "atypical" in the manic psychosis of this adolescent girl,

there was, with three attacks of very short duration at monthly intervals, no psychosis prior to that and none since, a peculiarity in the course of the psychosis which raises the question whether or not this was a case of "genuine" manic-depressive psychosis.

A common feature of the first 3 cases was that their manic psychoses were combined with severe motor excitement. As physical exercise is said to influence the blood iodine one could gain the impression that any observed changes in blood iodine—either elevation or decrease—were corresponding to the degree of motor excitement. That this is not necessarily so is evident from the two following cases:

CASE 4.—The patient is a man 43 years old who has had four manic attacks. During the present fifth attack he was hospitalized for more than three months prior to our examinations. It must be emphasized that in this case there was no motor excitement at all, and the symptoms were purely those of an altered mood. He was a classical manic picture, continuously joking, making witty remarks, talking incessantly, with marked flight of ideas. The blood iodine at six weekly intervals was 6.0, 9.6, 8.6, 6.6, 6.4 and 7.4 gamma per 100 cc. Although all readings were high, there was a marked parallelism between the increase or decrease of blood iodine and the degree of his manic disturbance. Six months later his manic mood had subsided to normality and his blood iodine was lowered to 1.6 gamma per 100 cc. After passing through a short depressive phase, the patient was dismissed from the hospital.

CASE 5. (Table IV.)—The patient is 48 years of age and for two decades has had cyclic swings in mood but to such a minor degree that he could carry on his occupation most of the time and never had to be hospitalized. The cycles of this patient followed each other at about monthly intervals. He has seldom, if ever, been in a normal condition during the last two decades, always being hypomanic or slightly depressed. The patient was seen by us [2] over a period of 84 days about twice weekly. This period covered two complete cycles. The following studies were made: androgen and estrogen output in the urine, blood and urine calcium, non-protein-nitrogen, blood sugar, blood cholesterol, blood iodine, hemoglobin, cell count and differential cell count, pulse, temperature, respiration and basal metabolic rate. It was impossible to carry out all the examinations listed each time the patient was seen but each study was made between 10 and 14 times during the period of investigation.

Table IV shows merely the swings of mood during the 84-day period, the changes in basal metabolic rate and the results of the blood iodine determinations. The upper curve shows the swings of mood as reported by the patient himself and as observed during the period of examination which lasted about two hours each time. The second line indicates the changes in the basal metabolic rate which, on the whole, follow closely the "ups and downs" of his mood. The highest basal metabolic rate obtained was +10 and the lowest —10, *i.e.*, all readings were well within the range of normal and only comparatively higher or lower. The same is to be said about the 11 iodine readings obtained. The center line of the diagram represents 1.7 gamma per 100 cc. of blood, the average value obtained, and the peaks of the points are more or less distant from 1.7 gamma. The lowest point is 1.0 gamma and the highest point is 2.4 gamma per 100 cc. Within these narrow limits it can be seen that the low in iodine coincides with the low in mood on both occasions and that the iodine is lower during the first depression observed than during the second. On the first occasion the patient was more deeply depressed. The high in iodine coincides with the high in mood on one occasion while towards the end the examination was ruined because the patient treated a boil with tincture of iodine which accounts for the sudden rise in blood iodine at the 10th and 11th examinations. It may be stressed that in this case there was no psychomotor excitement at all and that the cycles were purely swings of mood and that these swings were only of moderate degree.

TABLE IV

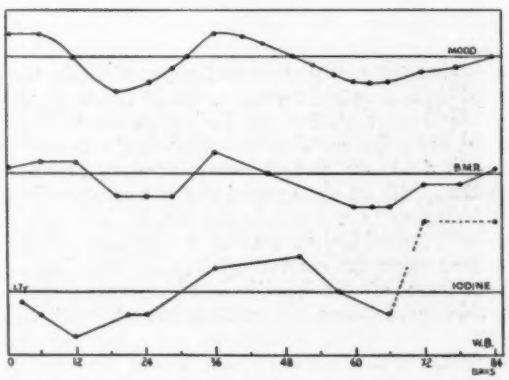


Table IV shows the changes in basal metabolic rate and blood iodine during two complete manic-depressive cycles of a patient.

While the basal metabolic rate and blood iodine follow closely the swings in mood it is noteworthy that none of the other qualities examined—including the blood cholesterol—show any parallelism to the mental changes in this patient.

Before proceeding with the description of the remaining 4 cases, it may be stated that

[2] We are greatly indebted to Dr. Abraham Myerson for this patient.

in the cases 1, 2, 4 and 5 the diagnosis "manic-depressive psychosis" is beyond doubt, while in case 3 the diagnosis seems to be reasonably certain. In all 4 cases in which the diagnosis is certain, we found that blood iodine levels follow closely the changes in mood regardless of whether or not these changes in mood were accompanied by psychomotor changes. The most pronounced change was presented in case 4, who showed no motor excitement at all.

A few other patients, besides the manic-depressives, were repeatedly examined over definite periods of time. These patients were selected on the basis of the presence of changes in mood or of motor excitement.

CASE 6.—This is a patient 38 years old with Graves disease. She was hospitalized because of a hallucinatory state of confusion with severe motor agitation; the psychosis lasted about 8 weeks and ended with complete recovery. Blood iodine determinations were carried out during the second half of the psychosis for 4 weeks. During the first two examinations the patient was still confused and agitated, until at the time of the last examination, she was nearly completely recovered. The blood iodine decreased with clinical improvement from 5.6 gamma to 2.5 gamma per 100 cc. In view of the nature of the psychosis of this patient a parallelism between the clinical picture and the blood iodine is in accordance with expectation. It shows that hyperthyroidism is not necessarily connected with extremely high blood iodine.

CASE 7.—In this case a change in psychomotor excitement is the outstanding symptom. For many years, she has had a regular change between three days of severe catatonic excitement followed by three days of relative psychomotor quietness with hypomanic or slightly depressive mood. The patient has a marked tendency toward mutism but whenever she has rapport she shows no signs of mental deterioration. It is difficult to classify this psychosis. This patient has been examined 10 times during two seasons. Whether the patient was in catatonic excitement or quiet, in an apparently normal or in a slightly changed mood, the blood iodine did not show any appreciable change. All iodine examinations ran between 1.2 and 2.2 gamma per 100 cc. blood.

CASE 8.—The patient is 38 years of age and has a general paresis. Arsphenamine treatment had ended 8 weeks prior to our examinations. The patient was examined six times during a period of 4½ months. At the time of the first and second examinations he was euphoric and very agitated. At all the later examinations (4, 7, 11, 19 weeks later) the agitation had subsided and the euphoria became gradually less; at the time of the last examination the patient was without any initiative and a slight dementia had developed. In spite of these marked changes in mood, motor excitement and intellect there were no changes in the blood iodine. At the first examination the blood iodine was 1.1 gamma per 100 cc., somewhat low, while all subsequent studies showed the iodine to be around 2.0 gamma with no greater variation than from 1.8 to 2.2 gamma per 100 cc.

CASE 9.—This is a patient of 42 years, with a chronic paranoid psychosis and showing remarkable changes in mood. At the first examination she was quiet, cooperative and in an even mood; the blood iodine was 1.7 gamma per 100 cc. One week later the patient was slightly but definitely depressed; the blood iodine was 2.2 gamma per 100 cc. Four weeks later the patient was hypomanic, the blood iodine was 1.8 gamma per 100 cc. After that she refused further withdrawal of blood.

DISCUSSION

Although the number of cases in our series is small, a few points appear clearly enough in the material to illuminate some questions previously discussed in the literature. These questions concern fluctuations of blood iodine under the influence of diet, season, menstrual cycle, motor excitement, physical exercise, mood, etc.

As previously stated, we tried to exclude dietary changes of blood iodine in our patients as much as possible. Judging from the very constant results we obtained in the majority of the patients we succeeded in our effort. Seasonal influences were excluded as the examinations were carried out only during the winter months and interrupted with the onset of summer heat.

As a great many of our patients were females the question arose as to whether or not blood iodine fluctuations occur in accordance with the menstrual cycle. No such correlation was found to exist in any of our patients. Nearly all were in the years of full sexual activity but none showed differences in blood iodine according to cycle. We feel that this would also be true in non-psychotic women.

A further point of discussion to which our material contributes is the question whether or not physical strain and motor excitement influence blood iodine. On the basis of our observations we have to deny this. Psychomotor excitement in psychotic disturbed patients surpasses very often the physical strain and excitement which any non-psychotic person could endure; and although a great number of the patients whom we

examined (either agitated melancholias, hypermanics or catatonic excitements) exhibited the severest form of excitement, their blood iodine was normal or even low. Whenever it seemed, as in cases 1 and 2, that motor excitement was connected with high blood iodine this was merely coincidental. The highest values were obtained in case 4 who showed no psychomotor excitement at all. Therefore, we can state definitely that, *at least in psychotic patients, physical strain and psychomotor excitement do not necessarily raise the level of blood iodine.* For reasons which will be discussed later, it seems possible that in this respect psychotic and non-psychotic individuals react differently.

Before stating the factors to which iodine shows a positive correlation we have to discuss the iodine values found and the psychotic conditions examined. As has already been stated in regard to the iodine values, the average in our normal controls is less than 50 per cent of the values found by Perkin with the same method. However, the average of 2.95 gamma per 100 cc. blood is very close to the average of 3.1 gamma per 100 cc. found by Riggs and Man(1) recently with a different method. We feel sure that neither the limitation of our examinations to the winter-season nor the fact that our patients were on hospital diet accounts for the lower results which we obtained—for the majority of our control subjects were not on a hospital diet. Furthermore, without purification of the bromine used, it is always possible for us to obtain values corresponding to the values quoted by Perkin. It is purely this minor change in the method which is responsible for the lower values thus obtained. This change proved to be necessary and the average value of 3.0 gamma per 100 cc. of blood is probably representative for an average adult population in Boston.

As was shown, the group of manic patients showed a considerably higher average in blood iodine than the control group while the group of depressed patients showed a definitely lower average. This led to the question of diagnosis and its reliability. We started with true manic-depressive psychoses and intended to limit our examinations to this group. However, as several members of the hospital staff selected the patients for us the well-known difficulties of psychiatric diagnosis became apparent. Cases with chronic manic psychosis or with chronic depressed states, whose classification as genuine manic-depressive psychoses seemed doubtful, were turned over to us. Therefore, both groups of manics and depressives, were arranged according to symptomatology and not with the viewpoint of the "entity of disease." No organic psychoses were included, except for one control case, but only so-called "functional" affective psychoses. However, it must be stressed that the *true* manic-depressive psychoses were exclusively those who contributed the high values of blood iodine in the manic group and most of the very low values in the depressed group.

In the nine cases which we have described in brief, the diagnosis was verified as nearly as possible and only in the case of the girl of 14 years of age (case 3) a doubt remains as to whether or not she is to be regarded as a "genuine" manic-depressive psychosis. These 9 cases show in greater clarity what the two groups as a whole have already revealed, namely, a close parallelism between the manic-depressive changes in mood and blood iodine. We stress the fact that changes in mood in paretic, paranoid and schizophrenic patients are not accompanied by changes in blood iodine, but that these latter groups show remarkably constant blood iodine values. As has been mentioned previously, it is not the change in motor excitement but only the change in mood which is accompanied by changes in blood iodine in manic-depressive psychoses. These changes —between 6, 8, 10 gamma maximum and 1 or 2 gamma minimum—are significant as other patients show very little variation (less than 0.5 gamma).

It is remarkable that as cyclic changes in mood tend to be slight in degree so the fluctuations in the blood iodine tend to be smaller also (see cases 4 and 5). This leads to the assumption that in normal persons with a cyclothymic temperament we may find slight variations of blood iodine while in schizothymic persons the blood iodine may

be characterized by either extreme steadiness or severe unsteadiness.

In our examinations mood proved to be the only factor to which blood iodine ran parallel. However, in psychotic patients not every change of mood, but only the "genuine" manic-depressive swing in mood, was accompanied or followed by a change in the blood iodine. This leads to the question whether or not a change in thyroid activity is a link of importance in the pathogenesis of the manic-depressive psychosis. We are —on the basis of our findings—entitled to raise this question but not to answer it definitely. Many more data must be collected, many more details must be taken into consideration.

However, it may well be that findings as described here together with observations of other workers on blood-phosphorus(7) and cholesterol and future research may lead eventually to a more general principle in psychoses, namely, to a principle which expresses itself in the presence or absence of a defense mechanism; that psychoses with good prognosis would be those in which a defense mechanism—of a psychological-autonomic-endocrine-biochemical nature — is stimulated and that psychoses with bad prognosis would be those in which this defense mechanism is either not stimulated or exhausted too soon.

SUMMARY

1. As a group, manic patients have higher, and depressive patients have lower blood iodine levels than a group of normal controls.

2. In individual cases of true manic-depressive psychoses, we find a close correspondence between changes in mood and changes in blood iodine.

3. In contrast to these findings, we find no coincidence between changes in mood or motor excitement and blood iodine in other psychotic states.

4. The significance of the findings in the pathogenesis of true manic-depressive psychoses is discussed.

BIBLIOGRAPHY

1. Riggs, D. S., and Man, E. B. J. Biol. Chem., **134**: 193, 1940.
2. Salter, W. T. Physiol. Rev., **20**:345, 1940.
3. Perkin, H. J. Biochem. J., **27**: 1078, 1933.
4. Perkin, H. J., and Cattell, R. B. N. Y. State J. Med., **36**: No. 14, 1936.
5. McFarland, R. A., and Goldstein, H. Am. J. Psychiat., **96**: 21, 1939.
6. Wittkower, E., Scheringer, W., and Bay, E. Klin. Wschr., **11**: 1186, 1932.
7. d'Elseaux, Frank C. Paper read before the Mass. Psychiatric Society.

We express our gratitude to Dr. Abraham Myerson for his constant advice and encouragement in this study.

MINIMUM STANDARDS FOR POSITIONS IN PSYCHIATRIC SOCIAL WORK IN A MENTAL HOSPITAL

The following minimum requirements for positions in psychiatric social work in mental hospitals have been advanced by a joint committee [1] representing the American Psychiatric Association and the American Association of Psychiatric Social Workers.

The committee is aware of the fact that in some psychiatric social work departments the responsibilities of the person in charge are chiefly administrative, teaching and research. In such settings, requirements both in experience and training should be high. The title allocation of chief or director and the salary should be commensurate with the duties of that position. For heads of departments where the duties and responsibilities are not so varied or extensive, and where the staff including students is not large, an alternative of senior psychiatric social worker has been suggested.

Experience qualifications herein outlined for the person in charge of a department of psychiatric social work are of minimum standard. The essentials of professional training are required, but due to the present difficulty in finding professionally trained persons to administer large social service departments of mental hospitals, minimum standards of experience have been suggested. As the demand for professionally trained psychiatric social work personnel grows and employment opportunities are extended, increasing experience can be demanded of candidates for the head position in psychiatric social work departments in state hospitals.

Salary standards for the various positions listed vary within a range of about $200 yearly, depending upon location and relative living costs. The salaries herein are listed in accord with the general average for professionally trained social work personnel. These salaries should be somewhat higher for a large metropolitan area and lower in those sections of the United States where living costs are proportionately less.

[1] Joint Committee 1941: Samuel W. Hartwell, M. D., Chairman; Karl M. Bowman, M. D., Earl Wm. Fuller, M. D., Paul E. Kubitschek, M. D., Harry C. Solomon, M. D., George S. Stevenson, M. D.

Maida H. Solomon, Chairman; Edith Schwarzenberg Cary, Hester B. Crutcher, Lois M. French, Marian Fox Graves, Anna Belle Tracy, Katherine M. Wickman.

Requirements for Chief or Director of Psychiatric Social Work in a Mental Hospital

Usual salary: $2400-3000 with maintenance; $3000-3600 without maintenance.

Duties: Responsibility for organizing, supervising and directing the work of the social service department as follows:

(1) *Social case work* with adults and children of the hospital or clinic services or with patients on parole from the hospital or patients referred for treatment to the clinics held by the hospital.

(2) *Educational work* consisting of lectures or courses of instruction in social work to students of social service assigned to the department for training and students from other departments, as indicated; interpreting hospital and clinical social case work function and policies; serving community interests and needs as indicated; supervising and training social work students in their day to day case work performance; leading discussions or presenting cases for educational training or conference purposes.

(3) *Research participation* either individually or in collaboration in social research related to hospital or department interests.

(4) *Related work:* Establishing policies in cooperation with community agencies as well as intramural policies related to the department's function and organization; maintaining records; preparing reports; writing articles; participating in professional organization or community activity.

Minimum qualifications: Candidates must meet the requirements of one of the following groups: (a) Graduation from a recognized college or university from a four year course for which a Bachelor's degree is granted, supplemented by graduation from

a two year graduate course in an accredited school of social work with academic and field work specialization in psychiatric social work. In addition the candidate must have had at least four years of satisfactory post-graduate experience in social work, one year of which must have been in a supervisory capacity. Two of these years may have been spent in a social agency adhering to acceptable standards but two years of this experience must have been in social work in a psychiatric hospital, a psychiatric department of a hospital, or in a psychiatric or child guidance clinic; (b) College or university education as outlined under (a) supplemented by graduation from a two year graduate course in a school of social work. If specialization in academic and field work has not been in psychiatric social work, subsequent to graduation from a school of social work the candidate must have had at least four years of satisfactory post-graduate experience in psychiatric social work in a psychiatric hospital or clinic as described above with at least one year of this experience in a supervisory capacity; (c) College graduation as outlined under (a) with a satisfactory equivalent combination of training and experience as above described of which at least two years experience must have been in psychiatric social work, one year of which must have been in a supervisory capacity.

Requirements for Senior of Psychiatric Social Work in a Mental Hospital

Usual salary: $1900-2400 with maintenance; $2500-3000 without maintenance.

Duties: With a "chief" or "director" of psychiatric social work, the "senior" of psychiatric social work shall share in responsibility for directing or supervising one or more of the areas of work as outlined. In lieu of a "chief" or "director," when the department staff, including students supervised, is relatively small, the senior psychiatric social worker shall have responsibility for organizing, supervising and directing the work of the social service department as follows:

(1) *Social case work* with adults and children of the hospital or clinic service or with patients on parole from the hospital or patients referred for treatment to clinics held by the hospital.

(2) *Educational work* consisting of lectures or courses of instruction in social work to students of social service assigned to the department for training, and students of other departments of the hospital as indicated; interpreting hospital and clinical social case work function and policies; serving community interests and needs as indicated; supervising and training social work students in their day to day case work performance; leading discussions or presenting cases for educational training or conference purposes.

(3) *Research participation* either individually or in collaboration in social research related to hospital or department interests.

(4) *Related work:* Establishing policies in cooperation with community agencies as well as intramural policies related to the department's function and organization; participating in professional organization or community activity; maintaining records; writing articles; preparing reports.

Minimum qualifications: Candidates must meet the requirements of one of the following groups: (a) Graduation from a recognized college or university from a four year course for which a Bachelor's degree is granted, supplemented by graduation from a two year graduate course in an accredited school of social work with academic and field work specialization in psychiatric social work, and subsequently the candidate must have had at least one year of satisfactory, full time, paid experience in psychiatric social work in a psychiatric hospital, a psychiatric department of a hospital or in a psychiatric or child guidance clinic, six months of this experience to have been in a supervisory capacity; (b) College graduation and specialized social work education as outlined above; subsequent to this the candidate must have had two years of satisfactory, full time, paid experience in social case work in a social agency adhering to acceptable standards, one year of this experience to have been in a supervisory capacity; (c) College graduation as outlined under (a) supplemented by graduation from a two year graduate course in an accredited school of social work. If specialization in academic and field work has not been in psychiatric social work, subse-

quent to graduation from a school of social work, the candidate must have had two years of satisfactory, full time, paid experience in psychiatric social work in a psychiatric hospital, a psychiatric department of a hospital or in a psychiatric or child guidance clinic, one year of this experience to have been in a supervisory or administrative capacity; (d) College graduation as outlined under (a) and graduation from a school of social work as outlined under (c) and three years of satisfactory post-graduate, full time paid experience in social case work in a social agency adhering to acceptable standards, one year of this experience to have been in a supervisory capacity; (e) College graduation as outlined under (a) and a satisfactory equivalent combination of the foregoing education, training and experience as outlined above.

Requirements for Psychiatric Social Worker in a Mental Hospital

Usual salary: $1200-1800 with maintenance; $1800-2400 without maintenance.

Duties: Under supervision to carry psychiatric social case work with adults and children in the hospital or clinic services or with patients on parole from the hospital or patients referred for treatment to clinics held by the hospital; to present cases or lead discussions for educational or training purposes in staff conferences; to participate in a social research program related to hospital and department interests; to do related work as required, *e. g.,* cooperate with community agencies and activities, assist in the hospital's training and educational program, maintain case records, write articles, prepare reports.

Minimum qualifications: Candidates must meet the requirements of one of the following groups: (a) Graduation from a recognized college or university from a four year course for which a Bachelor's degree is granted, with graduation from a two year graduate course in an accredited school of social work in which specialization in academic and field work must have been in psychiatric social work; (b) College graduation as outlined under (a) supplemented by graduation from a two year graduate course in an accredited school of social work where, if specialization in academic and field work has not been in psychiatric social work, the candidate's experience must include not less than six months supervised experience in psychiatric social work; (c) College graduation as outlined under (a) and a satisfactory equivalent combination of the foregoing education and experience including not less than six months supervised experience in psychiatric social work.

COMMENT

CIVILIAN MORALE

The Committee on Public Education, under the chairmanship of Dr. C. C. Burlingame, has distributed to members of The American Psychiatric Association two memoranda which are here reproduced. These notes on civilian morale were compiled from data gathered by the Committee on Military Mobilization and are intended for use "on public occasions and in private relationships" in the all-out undertaking of the Nation to defeat the enemies of mankind. The suggestions hereunder may serve as a guide in the preparation of written articles, in public addresses, radio talks, etc. Already reports have been received that good use has been made of these "Notes" and that they have been found to serve their purpose well. Every act and every word of each individual calculated to buttress his own morale and that of his fellows is a direct contribution to the struggle of the decent peoples of the earth who are fighting the good fight to overcome the Evil Thing.

It is requested that any experiences or comments arising out of the use of these notes be reported to the Committee on Public Education.

NOTES ON CIVILIAN MORALE

PART I

Over-anxiety may cause civilian panic in war emergencies and may be brought about (1) purposefully by the enemy, or (2) may be caused by inadequacies in the individual.

Purposefully induced anxiety is a part of the technique of modern propaganda warfare.

1. *Threats.*—Following attack by bombardment or air raids the enemy blares "this is only the beginning" or, "only a fraction of our force was used," or "the full brunt has not yet been felt." An understanding of this "threat of things to come" as a part of propaganda technique is the best antidote to this form of mental sabotage.

2. *Rumors.*—These bear chiefly on impending disasters or "great losses of our troops" or "worse than the authorities have stated" or "sabotage—there are saboteurs all around us" or plaints about "our inadequate leadership." Antidote to this is *stop, look and think.* Ask where the rumor came from; challenge it instead of accepting the statement. Do not help to spread it—more, tell your informant you're not accepting it; suggest that he's helping the enemy by repeating the story, without official confirmation. In short, tell him to "pipe down."

The technique of "threats and rumors" was used successfully in France. If you know it, then it becomes ineffective.

Some anxiety states are the result of personal inadequacy.

1. *Fatigue.*—Those who suffer from fatigue are pessimistic and gloomy. This is particularly important in executives who may transmit their gloom to others. Undue fatigue, particularly among those engaged in special defense duties should be avoided.

2. *Malnutrition.*—Poor physical health, undernourishment make people gloomy, pessimistic and fertile soil for planting seeds of panic. Improved nutrition is a pertinent public health problem at this time for the improvement of morale. Well nourished people are optimistic and are less apt to "crack" in an emergency.

The four horsemen of morale destruction are: Threats—Rumor—Fatigue—Malnutrition.

Because of their key positions, Air Raid Wardens have probably been chosen with a consideration of their stability. Over-anxious "edgy" people, peevish people, people who are always "in a hurry" have probably been refused because their over-anxiety can be contagious and might result in panic in others.

These "key" men in civilian defense are probably resourceful, quick and decisive, capable of reestablishing the usual routine as quickly as possible. Experience has demonstrated that *mental casualties result not so much from threat of bodily harm as from disruption of the normal living processes.*

The best antidote to panic is harnessing the usual tendency of people to get together in groups in emergencies by directing their energies in positive constructive ways through clearly defined duties. *"Safety first" must of necessity give way to service first.*

PART II

Morale—Importance and Control

Upon morale depends in great measure the outcome of the War. Every man and woman can contribute to the building of morale.

CONTROLLING FACTORS

(a) Physical fitness.
(b) Nutrition—adequate diet.
(c) Fatigue—avoid becoming overtired.

(d) Mental health—as important as physical health.

(e) Organization of groups—do something useful.

(f) Understanding of psychological warfare—learn to weigh the news.

CONTROL OF MORALE

1. Building up morale in Civilian Defense Groups.

This group should know clearly what its job is and should be well trained in doing it. It must have the attitude of "service first." Because of his contact with the civilian populace, the member of the Civilian Defense Group is the "key" person in maintaining morale on the local level.

2. The Civilian Group.

(a) Men and women in democratic countries work and fight best when they understand clearly what they are after and what is expected of them. Doing their job the best way they can, helps. *Get after your own job. Do it better. Do it faster. Do it more economically.*

(b) *Working trim* is just as important as fighting trim. Fit workers are workers who can build up high morale. War time is epidemic time; cooperate in limiting epidemics of colds and other infectious or contagious diseases. Do not waste your time being sick or half sick. Do not waste your fellow worker's time telling him about your headaches or your teeth. *Get into working trim. Take a balanced diet. Take some exercise daily.*

(c) *Rumors.* Stop, look and listen. Ground a rumor by not passing it on. Pay no attention to what the enemy says he is going to do to us. Concentrate on what we're going to do to him! Do not be misled by enemy "news." Learn to weigh it carefully, and remember a great deal of it is directed at *you* to help destroy *your* morale.

(d) *Be tolerant*—that is the democratic way. Bickering and conflicts between groups within this country help the enemy. Reasonable criticism is beneficial to democratic government, but unreasonable bickering and refusal to go along with the majority, once the decision is made, pleases no one more than those who wish to destroy our free institutions.

EUTHANASIA

In this issue of the JOURNAL appear two papers dealing with the attitude of society to the feebleminded—one by Dr. Foster Kennedy presented during the annual meeting of the Association in 1941, the other by Dr. Leo Kanner presented during the meeting of 1942.

The title of the second paper and the mode of treatment of the subject are seemingly suggested by the presentation of the previous year; and at first glance these two addresses, by recognized authorities, appear to represent quite contrary standpoints. With careful perusal of the texts, however, the differences narrow down to a single point: for a specified group of defectives and under specified conditions Dr. Kennedy advocates euthanasia; Dr. Kanner opposes this procedure. Both writers are agreed as to the existence of the group in question and the hopelessness of their condition; one proposes a method of disposal which he believes would bring relief to all concerned, the other prefers to let the situation remain as it is. There is no obvious difference of opinion with regard to sterilization. Dr. Kanner states that it is "often a desirable procedure," but that it would be "unfair discrimination to decree such a measure solely on the basis of the I.Q." With this qualification presumably Dr. Kennedy would agree.

We are left then with an impasse on the question of euthanasia; and here there will probably be no general agreement for a long time to come. Professionals and laymen will continue to hold strong opinions for and against—opinions based partly on experience, partly on individual habits of thought, personal prejudice, the consensus of the social groups in which they move.

But the issue is a live one and it is of interest to consider some of the arguments involved. First there is the religious issue. To this Dr. Kennedy offers a neat reply; but a captious reader may ask whether he solves the difficulty or merely by-passes it, since it seems to be implied that although "with no good brains there can be no good mind," as in the "completely hopeless defective—nature's mistake," nevertheless a soul of quality may be associated with the misshapen body and undeveloped brain of the helpless, inarticulate idiot. But this is a theological point on which the medical man cannot speak as an expert. We shall probably have to agree that in a case in which parent or guardian sincerely maintained the religious

objection to euthanasia, the constituted authorities should not override that objection.

A second position is that of the person who has a rooted aversion to the taking of life in any circumstances. In this category may be reckoned also certain "conscientious objectors," opponents of capital punishment, antivivisectionists. Motivating factors underneath these attitudes are various. The abstraction "conscience" may mean much or nothing, ranging from deep and honest conviction or misguided fanaticism to self-deception or malingering. At any rate in so far as the present issue is concerned, the question is not one of "faith," as in the religious attitude, but one of "reason," which is not quite so sacrosanct and may be weighted accordingly in evaluating individual situations.

A third variety of reaction results from an accusing sense of obligation on the part of the parents toward the defective creature they have caused to be born. The extreme devotion and care bestowed upon the defective child, even with sacrifice of advantages for its normal brothers and sisters is a matter of common observation. The position is understandable, but to the impersonal observer may appear to partake of the morbid. Disposal by euthanasia of their idiot offspring would perhaps unbearably magnify the parents' sense of guilt.

In a fourth group of cases the impression is unavoidable that the determining influence in the parental mind is the dreaded opinion and comment of neighbors. This fear of opinion even deters sometimes from placing a mentally deficient child in an institution when the interests of child and family alike would be best served by such action.

As a fifth motive may be urged parental 'instinct" and love which resist the thought of loss even of the defective offspring. Here again, as in all aspects of the question, reactions will differ. We may cite however the case of a mother of good repute who freely admits that she cannot feel love for her idiot child or any sense of attachment. But assuming that parental affection does exist, does it manifest itself more generously in insisting that a crippled vegetative existence be continued at all costs or in welcoming its merciful passage from life?

To be mentioned also is a sixth factor which moulds opinion and influences action, namely the almost reflex antagonism of the general mind to any new and drastic procedure. Thus useful measures which must have legal sanction are delayed by decades.

The several motives which have been outlined may operate in various combinations. From their consideration at least one point emerges which deserves more attention than it has hitherto received, and that is the relationship itself between parent and child, whether it be wholesome or morbid. And the reference here, let it be remembered, is solely to the lowest grade of defectives for whom alone euthanasia has been proposed—"those hopeless ones," as Dr. Kennedy puts it, "who should never have been born."

When the problem of mental disability arises in a family the psychiatrist knows full well that he must concern himself not alone with the patient but also with the family group and the interrelationships between its members. Attitudes, stresses, frictions are studied particularly to assess their effect upon the patient, and no treatment program is satisfactory which does not attempt to correct unwholesome family relationships which may have contributed to the patient's illness. The physician's interest is directed to the unfavorable influences which this or that member of the family has exerted consciously or unwittingly upon the one who has become ill.

When the mental problem is the existence of an idiot in the family circle the same principle holds although the situation is altered. The influence of the parents on the defective child is self-evidently not the question; it is rather the reflexive effect of the parents' attitude upon themselves, upon the decisions they take, upon the continuing family life and well being. It is submitted that the state of mind of the parents of an idiot may as fairly become a subject of psychiatric concern as the interrelationships in the families of psychotic patients, and that unwholesome reactions stand as much in need of correction in one case as in the other.

Standpoints re euthanasia will differ and will oppose each other among the laity just as they do among scientists, as exemplified in the two papers which prompted this dis-

cussion. But scientists presumably have reached their convictions by more or less impersonal routes; the layman on the contrary who has the misfortune to be the parent of a low-grade defective is actuated by strongly personal motives which he may or may not be capable of setting out clearly in his own consciousness One parent may passionately reject the suggestion that his helpless and hopeless progeny should be relieved of the burden of living; another would wholeheartedly welcome such release. It is significant, too, that the parent who would steadfastly withhold any move to hasten the exit, is manifestly relieved and gratified when intercurrent disease or "natural causes" have written a lethal finis to the painful chapter.

The question then is whether the attitude of the parent to the defective child can be regarded as morbid, and if so, whether anything can and should be done about it. It is difficult to conceive how normal affection can be felt for a creature incapable of the slightest response; and exaggerated sentimentality or forced devotion which can serve no possible purpose can hardly be looked upon as desirable. Anything that can be said or done to relieve a parent's mind of the unhappy obsession of obligation or guilt, and to bring him to a more dispassionate view of a hopeless situation would seem to be good mental hygiene.

Euthanasia is one of those vexed issues in which personal bias will play a varying but inevitable rôle in shaping opinion. It will have its advocates and its opponents—the latter no doubt still greatly in the majority. Dr. Kennedy favors the procedure under legal sanction in certain carefully defined cases, and he offers strong arguments in support of his position. Dr. Kanner opposes this position but in his paper presents no arguments beyond the statement: "An idiotic child may have fond parents who want him alive." That is precisely the psychiatric problem this overlengthy discussion has been trying to get at, namely, the "fondness" of the parents of an idiot and their "want" that he should be kept alive. It is this parental state of mind that we believe deserves study —the extent to which it exists, in fact and not merely as a generalization of opinion, what underlying factors such as those set forth above are discoverable, whether it can be assessed as healthy or morbid, and whether in the latter case it is modifiable by exposure to mental hygiene principles.

If euthanasia is to become at some distant day an available procedure, enabling legislation will be required. The story of sterilization will doubtless be repeated on an extended scale. But legislation may be expected to follow only upon the spread and strength of public opinion, and the nucleus of that opinion should be the attitude of those most nearly concerned—the parents of the candidates for the contemplated procedure. It is in the evaluation and melioration of this parental attitude that the interest of the psychiatrist in the whole question must center.

NEWS AND NOTES

THE BOSTON MEETING

The 98th annual meeting of The American Psychiatric Association was held at the Hotel Statler, Boston, Massachusetts, May 18, 19, 20 and 21, 1942. Despite the uncertainties due to the war, the attendance once again broke all records, a total of 1,584 being registered—771 of them Members or Fellows. A very gratifying number of psychiatrists serving with the armed forces were able to secure leave and attend the meetings.

Several innovations were made in the program. First of all, the meeting was telescoped into four days instead of the usual five, and the opening session was moved ahead to Monday rather than the customary Tuesday. The meeting of the American Association on Mental Deficiency was held the preceding week (May 13-16) in Boston, and the American Psychoanalytic Association on May 17 and (jointly with The American Psychiatric Association) 18. The American Psychopathological Association met on May 17, and shared the program of The American Psychiatric Association on military psychiatry.

The meeting was called to order by President James K. Hall on Monday morning, May 18, at 10:00 a. m. After the invocation an address of welcome by Dr. Frank R. Ober, President of the Massachusetts Medical Association, and several reports, the Association paid tribute to the memory of 25 deceased members. Section I then opened a program on "Morale and Military Psychiatry." A related topic, "Psychiatry and the United States Navy," was carried over into the afternoon session. The Section on Convulsive Disorders had an all-day program on Monday, the afternoon jointly with the American Chapter of the International League Against Epilepsy. The Section on Forensic Psychiatry met in the morning and afternoon of the same day.

Monday evening a largely attended public meeting was held in the Ball Room under the auspices of the Massachusetts Society for Mental Hygiene, the Mental Hygiene Division of the Massachusetts Department of Mental Health, and The American Psychiatric Association. President Leonard Carmichael of Tufts College, Director of the National Roster, spoke on "The Contribution of Scientific Psychology to the National War Efforts," and Dr. Arthur H. Ruggles, now President of the Association, spoke on "Psychiatric Problems in a Changing World." The American Psychopathological Association also held its annual dinner on this evening, being addressed by Professor Earnest A. Hooton of the Department of Anthropology of Harvard University.

On Tuesday morning, May 19, following a short business meeting and the election of officers, certificates were awarded to those Fellows who were advanced to that grade in 1941, and the retiring President, Dr. James K. Hall, gave his Presidential Address. A very pleasant unscheduled feature of the meeting was the first presentation of the Thomas W. Salmon medal for unusual service to psychiatry. Dr. Adolf Meyer, who had been designated by the Council as the recipient, received the medal from Dr. C. Macfie Campbell amid enthusiastic applause. At this ceremony nine ex-presidents of the Association were in attendance.

Tuesday's program was devoted to electric shock therapy, psychosomatic medicine, neurological problems, insulin shock therapy, and miscellaneous topics.

The Round Tables were held on Tuesday evening. The participants enjoyed a buffet supper in the Ball Room, repairing to the several meeting-rooms thereafter. The following topics were discussed: alcohol, applications of psychoanalysis to the National emergency, civilian mental health and morale, defense activities for psychiatric hospitals, experimental data on the unconscious, military psychiatry, occupational therapy, psychiatric nursing and the National emergency, psychiatric social service, Veterans Administration.

The Wednesday morning session of Section I was held jointly with the Section on Psychoanalysis, and the afternoon session with the Section and the American Psychoanalytic Association. The other topics of the day were geriatrics, psychosomatic medicine, schizophrenia, and miscellaneous topics.

The high light of the day's program was probably the presentation by Dean Howard Hanson of the Eastman School of Music of "A Musician's Point of View Toward Emotional Expression," with musical illustrations.

Wednesday noon the Devereux Schools held their annual invitation luncheon. A large group heard Dr. Leo Kanner's address entitled "The Exoneration of the Feebleminded." At the same time the National Association of Private Psychiatric Hospitals (Dr. J. K. Hall, President) held its annual luncheon, at which the eminent poet, Robert P. Tristram Coffin spoke and gave a reading of his poems.

The late afternoon of Wednesday was devoted to a garden party at "Weld," the estate of Mrs. Larz Anderson. In the evening the members and guests attended one of the famous Pop Concerts at Symphony Hall, under the direction of Arthur Fiedler. The concert was followed by a hilariously satirical musical skit composed by Dr. Donald J. MacPherson entitled, "Doctors in the Dark," with an all star cast including such notables as Merrill Moore, William G. Lennox, C. A. Bonner, H. Houston Merritt, and M. R. Kaufman. Robert Burns's wish was outdone by giving an opportunity to see ourselves as some of us see us!

The fourth and last day was opened with the election of members and fellows, in accordance with the recommendation of the Board of Examiners and the Council. Drs. Robert D. Gillespie and Gustav Aschaffenburg were elected Honorary Members. Six Latin American psychiatrists were elected corresponding members: Dr. Samuel Ramirez Moreno of Mexico City, who was present at the meetings and read a paper; Dr. Gonzalo Lafora of Mexico City; Dr. Honorio Delgado of Peru; Dr. Arturo Vivado of Chile; Dr. Miguel Ozorio de Almeida of Rio de Janeiro, Brazil; and Dr. Rodrigues Lopes, of the State of Minas Gerais, Brazil. The other elections were as follows: associate members 84; members 202; transferred from associate membership to membership 36; transferred from membership to fellowship 68; members reinstated 4; fellows reinstated 8.

The Committee on Resolutions then reported. The most significant resolution was as follows:

> Once again we are confronted with a National emergency. The country is participating in a world struggle of incalculable forces. It is most alarming to note that the Naval and Army forces are not utilizing the psychiatric facilities of this nation to the fullest extent. These facilities, both for actual military purposes and for civilian or military morale, are being shockingly unappreciated in spite of the lessons learned from the last World War. The most important factor seems to us one of time. We are already far behind production in other fields, in the matter of organization of psychiatric facilities for both the medical necessities and the social organization of the morale of the nation. Therefore, your Committee on Resolutions recommends the appointment of a well-chosen committee with power to act in making forceful representation of this status of affairs.

In accordance with this resolution the Association approved the election of a committee consisting of Dr. A. H. Ruggles, President; Dr. E. A. Strecker, President-Elect; and Dr. F. W. Parsons, Councillor.

The incoming President, Dr. Arthur H. Ruggles, was then presented. The day's program consisted in a meeting of the Section on Mental Deficiency and sections dealing with therapy, social science, administrative psychiatry, and miscellaneous topics. In the afternoon program devoted to schizophrenia two papers were presented dealing with research work subsidized by the Scottish Rite Masons, 33°, Northern Masonic Jurisdiction.

Mention has already been made of some of the entertainment features. The program of the local Committee on Arrangements, under the Chairmanship of Dr. Harry C. Solomon, and the Ladies Committee under Mrs. Oscar J. Raeder, was so full and varied and engrossing that the omission of the traditional annual dinner was hardly noted.

A full program of motion pictures illustrative of various procedures and institutions was carried out under Dr. Howard R. Masters, and an excellent scientific exhibit was presented under the supervision of Dr. S. Bernard Wortis. The commercial exhibits, though somewhat fewer than usual on account of difficulties in production, were excellent in quality and respectable in number.

A full report of the activities of the Council will be presented in the next issue. The name of the Committee on Military Mobilization was changed to the Committee on War

Psychiatry. The Committee on the History of Psychiatry was made a permanent committee. The Association authorized the purchase of $3,000.00 in Canadian Government Bonds, the Association having already purchased $15,000.00 U. S. War Bonds.

The following from state and local societies were accepted as affiliated societies of the Association: Michigan Society of Neurology and Psychiatry; Cincinnati Society of Neurology and Psychiatry; Kansas Psychiatric Society; North Pacific Society of Neurology and Psychiatry.

Dr. Karl M. Bowman was nominated as a member of the American Board of Psychiatry and Neurology, succeeding Dr. Franklin G. Ebaugh.

It was voted to select Detroit, Michigan, as the 1943 convention city.

The following officers were elected:

Arthur H. Ruggles, M. D., President; Edward A. Strecker, M. D., President-Elect; Winfred Overholser, M. D., Secretary-Treasurer.

Members of the Council for three years:

J. K. Hall, M. D., Titus H. Harris, M. D., Douglas A. Thom, M. D., Walter L. Treadway, M. D.

Auditor, for three years:

Charles W. Castner, Austin, Texas.

Officers of Sections were elected by the Sections as follows:

Convulsive Disorders: Nolan D. C. Lewis, M. D., Chairman; William G. Lennox, M. D., Secretary.

Mental Deficiency: Leo Kanner, M. D., Chairman; C. Stanley Raymond, M. D., Vice-Chairman; Oscar J. Raeder, M. D., Secretary.

Psychoanalysis: Philip R. Lehrman, M. D., Chairman; O. Spurgeon English, M. D., Vice-Chairman; Robert P. Knight, M. D., Secretary.

Forensic Psychiatry: Philip Q. Roche, M. D., Chairman; Frank Curran, M. D., Vice-Chairman; O. Spurgeon English, M. D., Secretary.

The program was well arranged and the papers of a high quality—a tribute to the hard and effective work of Dr. Karl M. Bowman and his Program Committee.

The facilities and service of the Statler Hotel added greatly to the success of the meeting. The weather, though not so tempting as to cause serious defections in attendance at the meetings, was sufficiently good not to interfere with the social and sightseeing activities, even in those incomparable barouches resurrected Heaven only knows where. Finally the thoughtful planning and unostentatious hospitality of the Committee on Arrangements under Dr. Harry Solomon and Mrs. Raeder made the meeting socially, as well as professionally, one long to be remembered.

WINFRED OVERHOLSER, M. D.,
Secretary-Treasurer.

DIPLOMATES, AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, CERTIFIED, MAY 16, 1942.

NEUROLOGY

(By Examination)

Bartle, Harvey, Jr., 133 S. 36th St., Philadelphia, Penna.*[1]

Brenner, Charles, 818 Harrison Ave., Boston, Mass.

Craig, Robert Lawrence, Duke Hospital, Durham, N. C.

Ecker, Arthur D., Physicians Bldg., Syracuse, N. Y.

Heller, Saul I., 40 E. 61st St., New York, N. Y.

Jessico, Charles M., Duluth Clinic, Duluth, Minn.

Levin, Paul Michael, 624 Medical Arts Bldg., Dallas, Texas.

Oller, Charles I., Philadelphia, State Hospital, Philadelphia, Penna.

Ranson, Stephen W., 12th General Hospital, Fort Custer, Mich.

Saxe, Earl, Tilton General Hospital, Fort Dix, N. J.*

Shapiro, Louis Bernard, 750 S. State St., Elgin, Ill.*

Sonenthal, Israel Ronald, 30 N. Michigan Ave., Chicago, Ill.*

Wies, David, McLean Hospital, Waverley, Mass.

NEUROLOGY

(On Record)

Weil, Arthur, 303 E. Chicago Ave., Chicago, Ill.

PSYCHIATRY

(By Examination)

Alexander, George Harold, Butler Hospital, Providence, R. I.

Apfelberg, Benjamin, 111-56 76th Drive, Forest Hills, L. I., N. Y.

Arnold, Jesse O., II, 36 Pleasant St., Worcester, Mass.

Arnold, Nita Mieth, 612 N. Michigan Ave., Chicago, Ill.

Barnes, Janet Stetson, Gardner State Hospital, East Gardner, Mass.

Beaman, G. Burnham, Jr., 520 Commonwealth Ave., Boston, Mass.

[1]Asterisk (*) denotes complementary certification.

Blankinship, Rex, Westbrook Sanitarium, Richmond, Va.

Broggi, Frank Scannell, 12 Lincoln St., Framingham, Mass.

Chase, Louis Samuel, 416 Marlborough St., Boston, Mass.

Cooke, Richard C., Metropolitan State Hospital, Waltham, Mass.

Crane, Albert Loyal, Route 7, Box 191, Evansville, Ind.

Dalrymple, Leolia Agnes, 82 Marlborough St., Boston, Mass.

DuBois, Franklin Smith, Silver Hill, New Canaan, Conn.

Dunstone, H. Carter, Box A., Ypsilanti, Michigan.

Flanagan, Norris Butler, 270 Commonwealth Ave., Boston, Mass.

Friedman, Samuel, Fairfield State Hospital, Newtown, Conn.

Futterman, Samuel, 49 E. 96th St., New York, N. Y.

Glauber, Israel P., 111 E. 60th St., New York, N. Y.

Goldensohn, Leon Nathaniel, 160 E. 89th St., New York, N. Y.

Hale, Frank Abram, Bellevue Psychiatric Hospital, New York, N. Y.

Hall, Volta Ross, Jr., 163 Hillside Ave., Arlington Heights, Mass.

Hamilton, Francis J., 525 E. 68th St., New York, N. Y.

Harrington, Francis T., P. O. Box 1769, Dallas, Texas.

Hartman, Henry Lee, Taunton State Hospital, Taunton, Mass.

Haugen, Gerhard B., 16 E. Madison St., Baltimore, Md.

Hayward, Emeline P., 48 W. 85th St., New York, N. Y.

Heiman, Marcel, State Hospital, Mt. Pleasant, Iowa.

Hirning, L. Clovis, Grasslands Hospital, Valhalla, N. Y.

Hletko, Paul, 100 Barnard Rd., Manteno, Ill.

Holmer, Paul, 221 N. 6th St., Reading, Pa.

Jensen, Reynold A., 412 Delaware St., S. E. Minneapolis, Minn.

Kaufman, S. Harvard, Eastern State Penitentiary, Philadelphia, Pa.

Kelley, William H., 119 Harley Court, Lansing, Mich.

Kernkamp, Ralph F., Eloise Hospital, Eloise, Mich.

Kozol, Harry L., 82 Marlborough St., Boston, Mass.

Lipschutz, Louis S., Eloise Hospital, Eloise, Mich.

Lonsdale, Henry G., Elgin State Hospital, Elgin, Ill.

Mitchell, Harold L., 121 University Place, Pittsburgh, Pa.

Oltman, Jane E., Fairfield State Hospital, Newtown, Conn.

Peatick, George E., Phila. State Hospital, Phila., Pa.

Piers, Gerhart J., Elgin State Hospital, Elgin, Ill.

Rak, I. Paley, 189 Bay State Rd., Boston, Mass.

Regan, John F., State Hospital, Howard, R. I.

Robinson, Joseph Franklin, 335 S. Franklin St., Wilkes Barre, Penna.

Rose, Augustus S., 270 Commonwealth Ave., Boston, Mass.*

Rosner, Albert A., 700 W. 168th St., New York, N. Y.

Ross, Alexander T., Billings General Hospital, Fort Benjamin Harrison, Ind.*

Ross, Nathaniel, 993 Park Ave., New York, N. Y.

Ruskin, Samuel H., Eloise Hospital, Eloise, Mich.

Russell, John A., Child-Center, Catholic University, Washington, D. C.

Sanford, Hawley, S., Henry Ford Hospital, Detroit, Mich.*

Sears, H. A., State Hospital, Kalamazoo, Mich.

Simon, Abraham, Kankakee State Hospital, Kankakee, Ill.

Spiegel, Leo Angelo, 285 Riverside Drive, New York, N. Y.

Stein, Robert J., 1035 Stuart Bldg., Lincoln, Neb.

Steinberg, Saul, Norristown State Hospital, Norristown, Pa.

Tarlau, Milton N., 114-06 Queens Blvd., Forest Hills, New York, N. Y.*

Tompkins, John Butler, McLean Hospital, Waverley, Mass.

Varney, Jewitt I., 121 Westchester Ave., White Plains, N. Y.

Wadsworth, George Leland, Box 26, Howard, R. I.

Wallenberg, Marianne, Manteno State Hospital, Manteno, Ill.

Weinberg, Jack, 915 S. Wolcott St., Chicago, Ill.

White, Charles Edwin, State Hospital, Howard, R. I.

Wick, Samuel, Box A., Wauwatosa, Wis.

Zeligs, Meyer A., National Naval Med. Center, Bethesda, Md.

Psychiatry

(On Record)

Brent, Meade Stith, Central State Hospital, Petersburg, Va.

Deutsch, Felix, 82 Marlborough St., Boston, Mass.

Deutsch, Helene, 44 Larchwood Drive, Cambridge, Mass.

Levey, Harry Barney, 43 E. Ohio St., Chicago, Ill.

Levitin, Emil Zola, 616 Jefferson Bldg., Peoria, Ill.

Liber, Benzion, 65 W. 95th St., New York, N. Y.

McCandliss, William Kerr, State Hospital, Trenton, N. J.

Pratt, George K., 80 Myrtle Ave., Westport, Conn.

Rowland, Edward Gould, New Jersey State Hospital, Trenton, N. J.

Spitz, Rene Arpad, 1150 Fifth Ave., New York, N. Y.

Squires, Walter H., Eloise Hospital, Eloise, Mich.

NEUROLOGY AND PSYCHIATRY
(By Examination)

Adams, Raymond DeLacy, Neurological Unit, Boston City Hospital, Boston, Mass.
Beck, Richmond James, 18 Fairview St., Huntington, L. I., N. Y.
Davis, Robert William, 4200 E. Ninth Ave., Denver, Colo.
Frumkes, George, 70 East 96th St., New York, N. Y.
Grinker, Roy R., 30 N. Michigan Ave., Chicago, Ill.
Hadden, Samuel Bernard, 37 S. 20th St., Philadelphia, Penna.
Heersema, Philip H., 102 Second Ave., S. W., Rochester, Minn.
Lindemann, Erich, Massachusetts General Hospital, Boston, Mass.
Palmer, Edwin James, Station Hospital, Fort Sam Houston, San Antonio, Tex.
Pessin, Joseph, 1300 University Ave., Madison, Wis.
Preu, Paul William, 333 Cedar St., New Haven, Conn.
Redlich, Frederick Carl, Boston City Hospital, Neurological Unit, Boston, Mass.
Rinkel, Max, 30 Charlesgate West, Boston, Mass.
Ruesch, Jurgen, Massachusetts General Hospital, Boston, Mass.
Sall, Manuel, 255 S. 17th St., Philadelphia, Penna.
Sherman, Irving C., 104 S. Michigan Ave., Chicago, Ill.
Sugar, Carl, 57 W. 57th St., New York, N. Y.
Towler, Martin Lee, 4200 E. 9th Ave., Denver, Colo.
Walsh, Maurice N., Mayo Clinic, Rochester, Minn.
Weinstein, Edwin A., 1070 Park Ave., New York, N. Y.
Yaskin, Hyman E., 577 Stevens St., Camden, N. J.

NEUROLOGY AND PSYCHIATRY
(On Record)

Gerber, Rubin A., 1120 Park Ave., New York, N. Y.
Gruenthal, Max, 32 W. 82nd St., New York, N. Y.
Hiller, Frederick, 8 S. Michigan, Chicago, Ill.
Jossmann, Paul Bernhard, 15 Bay State Road, Boston, Mass.
McDonald, James Francis, 121 E. 60th St., New York, N. Y.
Price, Richard H., U. S. Naval Station, Guantanamo Bay, Cuba.
Rosenberger, Andrew I., 324 E. Wisconsin Ave., Milwaukee, Wis.
Schley, R. Montfort, 610 Potomac Ave., Buffalo, N. Y.
Schlomer, George Max, Baldpate, Inc., Georgetown, Mass.
Sims, Leslie Bennet, Eastern State Hospital, Medical Lake, Wash.
Wildman, Henry Valentine, 1075 Park Ave., New York, N. Y.
Wilson, George, 133 S. 36th St., Philadelphia, Penna.

NEW YORK ACADEMY OF MEDICINE GRADUATE FORTNIGHT.—The Fifteenth Graduate Fortnight of the New York Academy of Medicine will be held October 12 to 23, 1942. Subject: "Disorders of the Nervous System."

The program includes morning panel discussions, afternoon clinics, evening lectures, scientific exhibits and demonstrations. Many of the hospitals in the city will present clinical programs in the afternoon sessions in which eminent clinicians will take part. The evening lectures by authoritative speakers will deal with a variety of topics of major current neurological and psychiatric interest.

Registration fee—$5.00 (Fellows of the Academy are registered without fee by virtue of their membership).

A complete program will be mailed to every fellow without request, and to other physicians upon request to the New York Academy of Medicine, 2 East 103 Street, New York, N. Y.

NEW YORK PSYCHOANALYTIC SOCIETY.—At its meeting on Tuesday, May 26, 1942 the New York Psychoanalytic Society and Institute elected the following officers: President, Leonard Blumgart, M. D.; Vice-President, Philip R. Lehrman, M. D.; Secretary, Henry A. Bunker, M. D.; and Treasurer, Samuel Atkin, M. D.

CLEVELAND JUVENILE COURT, POSITION FOR PSYCHIATRIST.—The position of psychiatrist in the Juvenile Court Clinic of Cuyahoga County in Cleveland, Ohio, is open.

Applications, or requests for information concerning qualifications and conditions of service may be addressed to the presiding officer, Judge Harry L. Eastman, 2163 East 22d St., Cleveland, Ohio.

SOUTHERN PSYCHIATRIC ASSOCIATION.—Because of the difficulty of travel during the National Emergency, it has been decided to hold the annual meeting of the Southern Psychiatric Association in Richmond, Virginia, November 6 and 7, 1942. These dates occur on the Friday and Saturday immediately preceding the annual convention of the Southern Medical Association, which

meets in Richmond the week beginning November 8, 1942, thereby affording an opportunity to attend both conventions.

Dr. James K. Hall, of Westbrook Sanitarium, Richmond, is chairman of the committee on local arrangements and will make hotel reservations provided application is made to him at a sufficiently early date.

DR. TALLMAN DIRECTOR OF MENTAL HYGIENE, MICHIGAN.—Dr. Frank F. Tallman, formerly director of clinical psychiatry, Rockland State Hospital, Orangeburg, New York, has been appointed Director of Mental Hygiene for the State Hospital Commission of the State of Michigan and assumed office March 15, 1942. At the time of his appointment Dr. Tallman was on leave of absence from Rockland to conduct the parole and family care study for the New York Temporary Commission on State Hospital Problems headed by Homer Folks, secretary of the State Charities Aid Association of New York City. Dr. Tallman graduated in medicine from the University of Alberta in 1927 and during the last twelve years has been associated with the New York State Department of Mental Hygiene. He was responsible for the organization and development of the children's unit at Rockland State Hospital.

The new Michigan mental hygiene program contemplates a state-wide educational program and will include a system of child guidance clinics. These clinics will not be connected with the state hospitals but will be housed in permanent quarters in suitable communities. The first three units to be established are at Muskegon with Dr. J. N. P. Struthers as director; Kalamazoo with Dr. Clyde B. Simson as director; and Saginaw with Dr. Norman C. Westlund as director. Other responsibilities include the coordination and expansion, with the collaboration of the medical superintendents, of the out-patient clinics now operating from the various state hospitals. A major function of the Department is the development of a state-wide family care and colony program which began operation in June by the placing of the first fourteen patients by Dr. R. A. Morter of the Kalamazoo State Hospital.

THE TREASURY OF SCIENCE.—A new series of low-priced ($1.25), pocket-size books designed to serve the student and the general reader interested in the sciences, by dealing authoritatively with varied aspects of modern scientific knowledge is projected under a Board of Editors which includes Dr. Alvin Johnson, Director of the New School for Social Research, Professor Harlow Shapley of Harvard University, and Dr. Alfred E. Cohn of the Rockefeller Institute. Their selection of subjects and authors, and their approval of the texts, promise to establish this series as a major contribution to the educational forces in American life.

These volumes, written by authoritative scholars, are not to be textbooks or to have a great apparatus in the way of footnotes or references. They are to be written abreast of the level of knowledge and to include as much of the history of the subjects as to make their contemporary position understandable.

It is the publishers' intention to add at least 24 volumes every year until the Treasury of Science represents a complete library of authentic works covering the entire range of man's knowledge of himself and his environment.

Correspondence on manuscripts is invited and may be addressed to Treasury of Science, L. B. Fischer Publishing Corp., 381 Fourth Avenue, New York, N. Y.

NATIONAL ASSOCIATION OF PRIVATE PSYCHIATRIC HOSPITALS.—A luncheon meeting of the Association was held at the Hotel Statler in Boston, May 20, 1942, during the sessions of The American Psychiatric Association. Speakers included Commander A. Warren Stearns, M. D., Chelsea Naval Hospital, Merrill Moore, M. D., Boston, Professor Robert P. Tristram Coffin, Bowdoin College, Arthur H. Ruggles, M. D., Providence, R. I., Karl Menninger, M. D., Topeka, Kansas, and Harry C. Solomon, M. D., Boston.

The high light of this meeting was the address by Professor Coffin, Pierce Professor of English at Bowdoin College. He gave a very moving recital, including a number of his own poems, together with some explanation of the circumstances which inspired

them. This feature proved as gratifying as it was unusual in a medical meeting.

Professor Coffin was introduced by another poet, Dr. Merrill Moore, who recited very effectively his own sonnet on the passing of time.

Membership in the Association is increasing and presently includes 111 hospital and individual memberships.

Officers reelected for 1942-43: James K. Hall, M. D., President, Richmond, Va.; Emory J. Brady, M. D., Vice-President, Colorado Springs, Colo.; and Mabel D. Ordway, M. D., Secretary-Treasurer, Boston, Mass.

The next annual meeting will be held in Detroit at the time of the meeting of The American Psychiatric Association.

COURSE IN GRAPHOLOGY.—An introductory course in scientific graphology will be conducted by Mrs. Thea Stein Lewinson at the New York State Psychiatric Institute and Hospital, 722 W. 168th Street, New York City, beginning Wednesday evening, October 7, 1942, at 8.30. This course will consist of ten weekly sessions on Wednesday evenings from 8.30 to 10 o'clock. It is open only to professionally trained clinicians or research workers who are professionally interested in the scientific development of handwriting analysis. The fee will be $15.00.

After the completion of this course, arrangements will be made for a special seminar for those interested in more intensive graphological training.

Applications should be made to Mrs. Thea Stein Lewinson, New York State Psychiatric Institute, 722 W. 168th Street, New York City.

WAR SERVICE APPOINTMENTS OF MEDICAL OFFICERS AND NURSES, UNITED STATES AND ALASKA.—To fill appointments for rotating interneship and for psychiatric residents in St. Elizabeths Hospital, federal institution for the treatment of mental disorders in Washington, D. C., the Civil Service Commission will accept applications for Junior Medical Officers until the needs have been met. The positions pay $2,000 a year.

The rotating interneship consists of 1 year of rotating service including medicine, surgery, psychiatry, laboratory, pediatrics (affiliation), and obstetrics (affiliation). Appointments are made on July 1 and January 1 of each year. Applicants must be fourth year students in a class A medical school. A postgraduate interneship of 1 year in psychiatry (psychiatric residents) is offered to graduates in medicine who have already served or are now serving in an accredited rotating interneship. Proof of completion of the interneship must be shown before entrance on duty. No written test is required and there are no age limits.

Revised requirements for nurses have also been issued by the Commission.

For Junior Public Health Nurse positions, $1,800 a year, there are now no age limits. Registered nurses who have graduated subsequent to January 1, 1920 from an accredited school of nursing, having a daily average of one hundred or more patients, and have completed or are enrolled in an approved course covering 1 academic year in public health nursing, may apply. One year of supervised experience in general public health nursing may be substituted for one-half of the year's study in public health nursing. The physical requirements have been greatly modified. No written test is required. Positions will be filled in the Public Health Service and in the Indian Service.

Public Health Nurse positions pay $2,000 a year and nurses are needed in this field for Indian service, including Alaska, and for the Public Health Service. Graduate nurses for general staff duty are also sought for the Indian service. These positions pay $1,800 a year. Graduation from high school is no longer required for the public health nurse or graduate nurse. Registered nurses with appropriate nursing education and experience may apply. There is no maximum age limit.

Persons interested in any of these positions are urged to secure the desired announcements and proper application forms from the Commission's representatives at first- and second-class post offices.

BOOK REVIEWS

PSYCHOLOGY OF ENGLISH. By *Margaret M. Bryant* and *Janet Rankin Aiken*. (New York: Columbia University Press, 1940.)

Psychology of English is a title which will attract the attention of varied readers. Just how much of the broad fields of psychology and language do the writers cover in this book? Bryant and Aiken give their main thesis succinctly: "The English language and grammar are the products of the group thinking of billions of people whose minds have worked psychologically rather than logically; and the fruit of this group thinking is a system which reflects behavioristic patterns rather than formal regularity. It will be our endeavor in this book to trace out the sort of group thinking and acting which has given to English the kind of grammar it has today and which will continue to modify it in the future."

The writers say that the book is "to a considerable extent a book against logic, a book in the modern tradition of uncertainty." More specifically it is a protest against regarding traditional grammar as the picture of a perfect logical system. Psychologists may feel that it is emphasizing the obvious to insist that language habits are not logically consistent, and that language is always a reflection of the people who use it. They will be interested in quotations from grammarians which suggest that this point of view is far from universally held. They will also welcome many fresh examples of psychological influences in the field of grammar.

The writers develop their argument with material from many sources, especially from grammars and handbooks of usage. Constructions which seem in conflict if one thinks in terms of a symmetrical and perfect system of grammar, they feel, can be readily understood if one thinks in terms of divergent human impulses. A series of chapters treats examples of such impulses or tendencies: arrogance and the desire to impress, modesty and politeness, impatience and abbreviation, emphatic frankness, confusion and profundity, and others. In a brief final chapter on "The Future of English" the impulses are related to three general principles of growth: formal simplification, diversification, especially in vocabulary and grammatical subordination), and increasing abstractness.

An important point in the theory is the jump from individual variations to a general change in usage. It is obvious that an individual may depart from established usage for some psychological reason, without thereby altering the course of the language. Many children say *sheeps* "because of a feeling for consistency" and yet usage remains the same. When will group thinking maintain the status quo and when will it not? The writers feel that imitation will keep things as they are except when many individuals feel the same impulses which led the initiating individual to make the change. Only then will imitation favor the variation. "Unless a grammatical situation is out of equilibrium, so that the operation of psychological factors will lead individuals independently to make the same 'mistake' (or alteration in the established system), imitation will not be a sufficient force to bring about that alteration."

The book is a general survey engagingly written, of a problem whose full solution would tax the combined resources of clinical psychologists, social psychologists, linguists and social historians. As the writers make no attempt to be exhaustive, readers with special interests must expect hints, rather than full solutions. Students of personality, for instance, will recognize with the writers that some people do not say *Every item was defective*, but rather *Each and every item was defective*. They might prefer to linger, however, over an experimental proof of the further statements that "People of this sort say *in any way, shape, or manner*, rather than simply *in any way*. They *continue on, return back, finish up, ascend up, descend down* in an endless variety of tautological expressions." Social psychologists and historians might want to develop more specific hypotheses about the occasions when many individuals will start a new construction independently.

The most general shortcoming of the book to many readers will be the looseness of vocabulary and "explanations." For example, the tendency to take short-cuts in word-forms and sentence structure is related to a common human impulse of expedition. Instances of the opposite tendency, which the writers call "long-cutting," they refer to other impulses, such as a desire for emphasis or for prose rhythm, or just plain laziness. It is wise to argue that the origins of grammatical change must be sought not in one key impulse, but in many, frequently opposed, impulses. And at this stage there is probably little harm if the impulses are loosely named. After one grants the original argument, however, one might wish for more definite proof that the constructions called lazy are congruent with the personalities of the individuals who use them, or with the dominant trends of the times in which they appear. The theory lacks force and utility unless it states the conditions under which one impulse or another is likely to dominate. The writers name the conditions at times, as when they find anticipation "in connection with hope, with the headlines, and with sentence qualifiers," but they are far from systematic in their efforts.

It seems unfortunate that in the crusade for psychological explanations, logic should be made so often the villain of the piece. The attack is not the sort that would cause logicians any worry,

and indeed it would give semanticists a useful exercise to study the many senses in which the word is used. One has the feeling that *logic* is not one straw man but a number of them, all wearing the same suit.

A final objection might be raised to the tendency, of which passages in this book are but an instance, to lump together Ogden, Richards, Chase and Korzybski, and then to say that they are "opposed to abstraction." Such generalizations do little justice to the varied theories of these men.

HENRY S. ODBERT, PH. D.,
Dartmouth College.

THE THERAPY OF THE NEUROSES AND PSYCHOSES: A SOCIO-BIOLOGIC ANALYSIS AND RESYNTHESIS. By *Samuel Henry Kraines, M. D.* (Philadelphia; Lea and Febiger, 1941.)

Dr. Kraines' purpose is "to state clearly and pragmatically as possible the factors underlying the formation of nervous and mental diseases and their treatment." His book is clear and practical, both in format and in the guidance it offers for the treatment of these conditions. It is, moreover, not an impersonal textbook but an exposition of the theoretical bases of the methods he uses and recommends.

The case method of presentation is used to excellent effect, illustrating the modes of development of the various neuroses, their characteristic features, and the details of their treatment. The fundamental psychology of the psychoneuroses is explained in a splendidly lucid chapter. Somatic manifestations of psychic disorders are adequately discussed, and the details of history taking are well presented. The practical value of the book is enhanced by an excellent index, although a bibliography is lacking.

One is impressed with the commonsense attitude of this book. The non-specializing medical reader will appreciate from its pages, that, essentially, wisdom in the physician is the basis for success in the diagnosis and successful treatment of the psychoneuroses, and that suggestion, hypnosis, and drugs are, as Dr. Kraines terms them, only adjuvant therapy. The carefully detailed instructions in the use of psychotherapeutic methods should be valuable to the general practitioner and the younger psychiatrist; but with all psychotherapeutic methods, one soon learns the art is as important as the method. Dr. Kraines utilizes the techniques of free association and dream analysis and describes them in some detail. His final chapter consists largely of an abstract of Healy, Bronner and Bower's *The Structure and Meaning of Psychoanalysis* which is apparently presented for the purpose of completeness, supplementing the more personal main essential text of the book.

The section on the psychoses is satisfactory but not as complete as that on neuroses. In many aspects it is inadequate for the specialist. Electric shock therapy, for instance, is barely mentioned.

The general practitioner will find here valuable general principles of treatment. Probably the author did not intend more, for the treatment of the psychoses is generally carried out by psychiatrists.

The book is well-written. The style is good and well adapted to the material. The volume is recommended.

S. BERNARD WORTIS, M. D.,
IRVING RUBINS, M. D.,
New York City.

THE PSYCHOLOGY OF THE PHYSICALLY HANDICAPPED. By *Rudolf Pintner, Jon Eisenson,* and *Mildred Stanton.* (New York: F. S. Crofts & Co., 1941.)

This book is an admirable compendium of certain psychological data on the physically handicapped. Written primarily as a textbook for colleges and universities and for the use of professional workers in the field, it is divided into two main sections. The first four chapters deal with general background material—personality development, mental hygiene, the internal mechanisms of behavior and appropriate tests for use with the handicapped; the last eight with the specific findings as regards the deaf, the blind, the crippled, such special groups as the diabetic and cardiac, and finally the speech defectives. Separate chapters on the "hard of hearing" and the "partially sighted" stress the important differences between them, and the deaf and blind both in essential characteristics and treatment needs.

The organization of the book is excellent. Each chapter dealing with a major group, after presenting the most reliable data available as to the incidence and etiology of the defect in question, reviews the early psychological contributions to the problem and then offers a critical summary of the results of standardized tests of intelligence, school achievement and special abilities, and of such personality studies as have been made. The results of vocational training are evaluated and specific recommendations for improvement in educational techniques are offered. It would be impossible within the span of this review to do justice to the wealth of detailed findings which the book incorporates. Each chapter, however, contains not only a general summary but frequently brief epitomes of the more important topical sections as well, and each is followed by a comprehensive bibliography.

Dr. Stanton is responsible for the chapters on the crippled and such special groups as the cardiac and diabetic, Dr. Eisenson for the three introductory chapters and for the last two on speech defectives, Dr. Pintner for an excellent general review of the tests available for the handicapped and for the more detailed chapters dealing specifically with the deaf and blind.

Since in the main the book is a survey of the status of the handicapped based upon the findings in a large number of studies utilizing objective tests and measures, the psychological point of view of the authors obtrudes itself relatively little. The first two chapters on personality development and mental hygiene problems are very brief but essentially sound. Personality types and various mechanisms of adjustment are discussed but the empha-

sis naturally is upon the special problems of the handicapped. The general approach is well-summarized in the statement: "A mental-hygiene program for the physically handicapped is not inherently different from that for the physically normal. Some of these mechanisms of adjustment are proper and socially acceptable; others are not. The physically handicapped do not have a monopoly of socially unacceptable mechanisms of adjustment. However, because adjustments in general tend to be more difficult for the physically handicapped than for the normal, they are more likely to resort to the use of mechanisms which are less desirable than are the normal. The essential difference is not in kind but rather in frequency and in degree of intensity in the use of socially unacceptable mechanisms of adjustment."

The third chapter which treats in considerable detail of the structure of the nervous system and the endocrines is the only one to which exception might be taken. While well presented it is extraneous to the purpose of the book as a whole for there is little or no discussion thereafter of the physical basis of the defects with which the book deals.

Otherwise the reviewer's only quarrel is with the title of the book. It is essentially a presentation of psychometric data and could better have been called such. The tendency to narrow the field of psychology to psychometrics, important though such objective measures are, is one to be deprecated by all clinicians. And in this case there is a wealth of material to be mined concerning the dynamics of the personality patterns commonly associated with physical handicaps which is most inadequately tapped by such tests as the Bernreuter. While occasional reference is made to the phantasy life of the special groups studied, only extensive clinical explorations into such fields as this would yield the data warranting the authors in claiming to have written the *psychology* of the physically handicapped.

Isabelle Kendig, Ph. D.,
St. Elizabeths Hospital,
Washington, D. C.

How to Teach Children Music. By *Ethelyn Lenore Stinson, Mus. B.* (New York: Harper and Brothers, 1941.)

This unique book offers a practical comprehensive account of the numerous problems inherent in teaching music and its appreciation. It is the result of four years of study and experimentation by one particularly well fitted for this type of investigation. The text describes in detail how to stimulate a love and understanding of rhythm and melody, and how to create a musical atmosphere. This course of study and the methods of teaching are applicable to the exceptional child, to the normal child who is not musically inclined, to the slow and backward child and to the problem child.

The general approach has been made in keeping with the best pedagogic principles, wherein interest is aroused by showing connections between the known and the unknown. The lives of famous composers, the story of music, its interpretation, the different varieties such as simple rhythm, symphonic and operatic forms, and the study of the instruments in an orchestra are worked into the everyday life of the child in an ingenious way.

At the Woods Schools where these methods have been developed and applied, the results have demonstrated not only the possibility of creating an interest in and an appreciation of music among exceptional children, but also of establishing a knowledge of, and an ability to interpret music. The favorable influence of this instruction is seen in the sphere of memory, in the ability to adapt themselves to others, in the improved home and parent-child relationship, in stabilizing the emotions, in providing an outlet for surplus energies, in revealing hidden abilities and in its functioning as a medium for creative expression.

The book will serve as a practical guide to teaching music in private classes, in public schools, in special training schools and in the various hospitals where children are kept under supervision and therapy.

Nolan D. C. Lewis, M. D.,
New York State Psychiatric
Institute and Hospital,
New York, N. Y.

Play for Convalescent Children in Hospitals and at Home. By *Anne Marie Smith.* (New York: A. S. Barnes and Company, 1941.)

Miss Smith has two objects: (1) to prove to the skeptical or disinterested the value of play for the sick child under the age of thirteen; (2) to outline methods, materials and means of promoting such play. The two objects interweave throughout much of her work.

In support of the first object she takes the premise that treatment of the child as a whole rather than of the illness only, brings greatest benefit. The therapeutic and character-developing value of constructive play which increases the small patient's courage, confidence, cheerfulness and social growth, is contrasted with unhealthy accompaniments of illness without play: boredom, bad habits, chronic invalidism.

As to the second object, discernment is shown in considering the nature of the play in relation to the situation of the sick child. Factors such as the nature of illness, hospital conditions, children alone and in groups, receive consideration. Organization for play and courses for student nurses and volunteers are discussed.

The lists of equipment, games and books are quite extensive. Rules for specific games are not provided but many references are given. Those who believe child's play is beneficial not only as an expression of acceptable social activities but particularly as outlet for antisocial impulses such as hostility, will be disappointed by the complete absence of the latter. Within the limits she maintains, the author observes what the child wants and needs, and formulates requirements accordingly.

As play enables the child to express emotion, it is particularly needed when illness brings frustration and restriction of accustomed outlets.

From the psychiatrist's standpoint, with this book as an introduction, it would be valuable to add to the author's zealousness and knowledge of play further acceptable outlets for the less acceptable impulses.

G. Henry Katz, M. D.,
Philadelphia, Pa.

Get More Out of Life. By *Catherine Groves.* (New York: Association Press. 1941.)

This little book written in non-technical language has been prepared to serve as a guide to those numerous persons of the lay public who are in need of some information about the real nature of dissatisfactions and maladjustments in life.

At first sight, from the title and also some of the chapter headings, one might identify this attempt with that mass of predigested and oversimplified "psychiatric" literature written by laymen which is now being poured through the press to no good purpose. However, a more intensive review will discover that the book has practical value for those who need advice on personal psychological problems, and that the author realizes there is "nothing simple about human personality."

The author is the Executive Secretary of the Family Service Association of Durham, N. C., and is a trained, experienced counselor in social service and welfare. She describes and illustrates by means of case stories a number of the personality problems and disorders that invite attention and correction, and offers specific information as to the source of desired aid.

Some of the fundamentals of human behavior and emotional development are discussed and the types of problems that should be brought to a counselor are pointed out. Many people suffer from unhappiness unnecessarily, as they do not know where to go for advice and treatment. Says the author: "There is as yet no known cure for some of the ills of the human spirit, but difficulties can be alleviated much more often than most people realize, if the troubled just knows where to turn for aid." The types of help and counsel available among the professions represented by psychiatrists of different styles, doctors, clergymen, lawyers, teachers and social workers are described.

Family counseling is a comparatively new occupation and it is emphasized that when the counselor is other than a psychiatrist he should have specialized in psychology and the social sciences, and should be sufficiently acquainted with mental and physical disorders to recognize when the individual is in need of medical care. Family counselors serve under various labels. Social workers, ministers, psychologists and some physicians specialize in various aspects of this field. A thorough description of the general and special characteristics of this work is to be found in the book which may serve as a guide to those contemplating seeking advice on their personal and family problems.

Nolan D. C. Lewis, M. D.,
New York State Psychiatric
Institute and Hospital,
New York, N. Y.

You Can Be Happily Married. By *Gilbert Appelhof, Jr.* (New York: The Macmillan Co., 1941).

With this cheerful assurance, the Reverend Gilbert Appelhof now rector of St. John's Church, Alma, Michigan, proceeds to give some fairly sensible advice to those whose glandular systems are precipitating them into the wedded state.

There have been a great many non-medical works on this subject, and the Reverend Appelhof's is by no means the worst of them. Most of his material is fairly prosaic but told honestly and the more intimate revelations are handled with commendable, non-clerical candor and without too much dwelling. He carefully eschews acting the psychiatrist and deals with the facts of life on a normal level, making no effort to delve into deeper mechanisms behind unhappy or unsuccessful marriages.

The general tenor may be judged from the bibliography which includes such well known students of personality as Dale Carnegie, Emily Post, Marjorie Hillis and Napoleon Hill who authored *Think and Grow Rich* which is "A systematic plan for the attainment of financial success."

The Reverend Appelhof while in Detroit a few years ago organized and directed the "Modern Marriage Clinic" and the book is based on this experience.

"Take time to get acquainted before declaring your love and affection" Reverend Appelhof advises the lovelorn swain, "Fast workers often fumble, and a man cannot afford to do that!"

C. C. Burlingame, M. D.,
Neuro-Psychiatric Institute of
the Hartford Retreat,
Hartford, Conn.

Mental Hygiene for Community Nursing. By *Eric Kent Clarke, M. D.* (Minneapolis: University of Minnesota Press, 1942.)

There is a small though growing library of books on psychiatric nursing and mental hygiene for nurses, but, as the author of this book remarks, such books have been confined largely to nursing in the hospital. He writes: "The present volume, however, attempts to review a cross-section of the problems that a community nurse encounters and to offer an interpretation of what may be behind these maladjustments."

This book will prove of great value to the public health nurse in her contact with the problems of patients in the community and in her relations with other community workers. For instance, we must all agree that "there can be no more valuable contribution to the mental hygiene program than a determined working together of all the various

branches of medical science to make a sound mind in a sound body a universal attribute." The book offers helpful suggestions toward accomplishing this.

The introductory chapters deal with the challenge of mental hygiene to the public health nurse and with a discussion of mental hygiene as a community responsibility. The main part of the book is a discussion of the principles of mental hygiene as they affect various age and handicap groups; the child, the adolescent, the family, the psychoneurotic, the psychotic. Especially valuable, because so seldom dealt with, is the chapter on the mental hygiene of the convalescent and the chronic invalid. The book ends with a consideration of the mental health of the community nurse.

We may perhaps suggest that the situation in nursing schools in connection with the basic training of those who later become public health nurses is not quite so dark as Dr. Clarke would seem to have found it. Many nursing schools now provide psychiatric experience for their students, and the majority at least realize that such experience is desirable and necessary, but there are a number of angles to the problem of obtaining it. However, there is a very widespread attempt to teach the mental hygiene implications along with the other aspects of nursing the patient. The importance of this field is also realized, more than Dr. Clarke has indicated, in both the training and the practice of public health nurses, for many schools now emphasize the mental as well as the physical side of their teaching function. The very fact, however, that nurses in the community are realizing increasingly the importance of mental hygiene in their work makes this text even more necessary and valuable. This book should be available to every nurse in the public health field.

N. Fidler, Reg. N.,
School of Nursing, University of Toronto.

The 1941 Year Book of Neurology, Psychiatry and Endocrinology. Edited by *Hans H. Reese, M.D., Nolan D. C. Lewis, M.D.,* and *Elmer L. Sevringhaus, M.D.* (Chicago: The Year Book Publishers, Inc., 1942.)

This annual publication is the most useful reference work now available, recording contemporary doings of significance in the fields represented. Material from foreign sources is greatly reduced, as it was last year. Nevertheless it has been possible to review some seventy-five or more European articles, exclusive of those from Great Britain, and there are also contributions from other parts of the Empire and from Latin America.

The section on military psychiatry, introduced last year, has doubled in bulk and all phases of the subject, from the examination of recruits to the treatment of psychoses and neuroses of active service and among civilians are dealt with. As might be expected convulsive therapy has been used with psychoneurotics. Rankine Good reports 40 cases so treated in England with improvement in 39, although return to military duty was in doubt, a result which the author attributed to "the negative therapeutic attitude of the patients."

There is a section devoted to child psychiatry, likewise one on the schizophrenic psychoses with a number of reports on the various shock therapies. The section editor, Dr. Lewis, comments: "Although a great deal of work is still going on with the pharmacologic shock methods, reports from this field are becoming fewer in number and present the same discordance in the results attained."

In the section on neurology the operation of prefrontal lobotomy, introduced in the United States by Freeman and Watts, is commented on by the section editor, Dr. Reese, and the technique outlined. The anatomic results are degeneration of the nucleus medialis dorsalis of the thalamus and some atrophy of the frontal pole. The neurologists of the Mayo Clinic report favorable results in a small series of cases.

There is increasing attention to the subjects of aging (gerontology) and the diseases of old age (geriatrics), as well as to the problems of alcohol and to the chemistry and physiology of the vitamins, particularly in muscle and nervous tissue metabolism.

Hormone studies continue likewise in the ascendant. In this connection the comment of the editor of the section on endocrinology, Dr. Sevringhaus, deserves quotation:

"Active interest in endocrine disorders by the laity and the medical profession is making it increasingly necessary for the endocrinologist to be conservative in his diagnosis. It is all too easy to ascribe diagnostic significance to findings which are traditionally part of 'an endocrine syndrome'. No offender is as frequently guilty as obesity. According to the interest or preoccupation of the observer, this may indicate pituitary, thyroid, pancreatic, adrenal or gonadal disease. Progress in clinical endocrine diagnosis demands increasing dependence on quantitative methods. Until there is a definite diagnosis, the clinician should consider that he must defend his prescription of any hormone. The time is at hand to insist that these potent materials be used with due respect for what good or harm they may accomplish."

C. B. F.

IN MEMORIAM

STEWART PATON

1865–1942

Stewart Paton died January 7, 1942, in his seventy-seventh year. Throughout his life he contributed markedly to more than one department of neuropsychiatry, and in several fields he was able to see the fruit of his labors take lasting and progressive forms. He was greatly instrumental in furthering the place of psychiatric training in medical instruction at a time when such action was pioneer work; and in later years he gave remarkable service to the development and organization of the clinical findings of psychiatry in their application to the social ends of mental hygiene and education.

Dr. Paton was born in New York City in 1865, the son of William and Anne Stavely (Agnew) Paton. He was graduated from Princeton in 1886 and received the degree of Master of Arts three years later. In 1889 he took his doctorate in medicine at the College of Physicians and Surgeons, Columbia, after which he did postgraduate work in Italy and Germany. On his return to America be began his long and varied contribution to the development of psychiatry in this country as associate in psychiatry at Johns Hopkins. This was before the establishment of the Henry Phipps Psychiatric Clinic, in the achievement of which Paton played an important and acknowledged part. It was during this period that he did much to implement and generally improve the teaching of psychiatry; as well as to bring about better laboratory facilities in the hospital and in medical instruction through his work as laboratory director of the Sheppard and Enoch Pratt Hospital. At this time he devoted increasing attention to studies in neurophysiology and neuropathology. From the first the investigation of the nervous system had held a major place in his interests, and in 1905 he went to Naples to work at the Zoological Station with Anton Dohrn, dealing especially with problems of neuroembryology and vertebrate morphology.

After five years spent in this most stimulating work Paton returned to America to become lecturer in neurobiology at Princeton, serving also as lecturer in psychiatry at Columbia. At this time there began a phase of his work which was later to develop most fruitful and far-reaching effects. It was at Princeton in the years before 1917 that his attention first became directed to the need of mental and proper psychological guidance among the student body. His work in this field grew increasingly in scope and importance and it was due mainly to his efforts to bring psychiatric help to problems of undergraduate health that the first program for the planned use of mental hygiene in colleges was established. He later extended these services to Yale where he was lecturer in psychiatry and consultant in mental hygiene, 1926-1928.

When America entered the World War in 1917 Paton contributed largely, with Pearce Bailey and Thomas Salmon, in the organization of a Neuropsychiatric Service for the armed forces. The importance of the experience and research derived from that service is even more clearly evident now, when psychiatry is faced with larger tasks along the same lines.

Dr. Paton was a trustee of the Carnegie Institution, a Fellow of the American Association for the Advancement of Science, and a member of the American Philosophical Society, the American Neurological Association, the New York Academy of Medicine. He was also a member of the Eugenics Research Association and in 1919 served as its president.

His published work reflects both the sequence and spirit of his main interests. In 1905 appeared his textbook of psychiatry—*Psychiatry: a Textbook for Students and Physicians*—a work which was widely used and which did much to further competence and understanding in this field of medicine. In 1918 the War Department, Air Service,

DR. STEWART PATON

at Washington published the *Manual of Medical Research Laboratory* of which Paton was a co-author. In 1919 he published *Education in War and Peace;* in 1921, *Human Behavior in Relation to the Study of Educational, Social and Ethical Problems;* and in 1922, *Signs of Sanity and the Principles of Mental Hygiene.* His last published book appeared in 1932—*Prohibiting Minds and the Present Social and Economic Crisis.*

But Paton himself was greater than his books. He had a calm serenity possessed by few and worked silently and consistently for the highest aims in psychiatry.

Dr. Paton married F. Margaret Halsey in 1892. She survives him, as do also their three children: F. Evelyn, William, and R. Townley.

SMITH ELY JELLIFFE.

As one of those who owe much to the stimulating influence of Stewart Paton I appreciate the opportunity to acknowledge my indebtedness to him. For a number of years our association was close and his many suggestions for research and help in various ways were an inspiration to me.

I have always felt that sufficient credit was never given Stewart Paton for much of the pioneer work that he did. At Princeton University he long advocated mental rating of students before authorities there and elsewhere opened their eyes to its importance. In psychiatry his views were sound yet advanced. Shunning fads, he took a sane and rational view of mental abnormalities, keeping abreast of advances but never carried away by the spectacular. In later years it was a regret that our divergent paths and the distance between us deprived me of the benefit of his kindly interest.

W. R. DUNTON, JR.

Stewart Paton had that valuable quality a good teacher must possess, an ability to interest and inspire the student. Along with that he had a kindly and gentle manner which, with other good attributes, gave him a most engaging personality.

In his Baltimore days his home was open house—a meeting place which brought together the greats of the medical faculty and the other schools of the University and the senior medical students. What a rare opportunity he gave those younger men, rubbing shoulders with Welch, Osler, Gildersleeve and many others in an informal, friendly and stimulating atmosphere! In ability and temperament he fitly belonged to that group of medical giants which made the Golden Days at Johns Hopkins.

WM. BURGESS CORNELL.

The outstanding memory of Dr. Paton is that of his kindliness and patience with a tyro in psychiatry. He was intensely interested in the work and attempted to impart his knowledge and interest to all with whom he came into contact.

I last saw him in Chicago where he was aiding in getting a mental hygiene clinic on its feet and his efforts greatly advanced the cause there. His speech at a meeting held to interest a conglomerate crowd of people was such that many became interested in what was to them before that time merely an academic subject.

He was a scholar and gentleman.

CHARLES RICKSHER.

Forty years ago when I was starting in psychiatry, Dr. Stewart Paton took me over to Washington and tried to show me in the aquarium there that in fish eggs something was to be learned about psychiatry from the study of growth principles.

Those early biological relations he emphasized and carried into the metabolisms of hospitalized mental patients, all of which have ever since colored my investigations into the causes of insanity and engendered in me a sound basis of thought.

Dr. Stewart Paton has gone, but the form of his teachings goes on, I am sure, in the minds of many students of psychiatry. It has built many stones into the structure of a subject which as a part of learning and social living has come to occupy a place of great importance.

And so may Dr. Stewart Paton rest, having lived a full life in which he exerted a wise and sound and abiding influence.

S. DEW. LUDLUM.

It was my good fortune to make a beginning in psychiatry under Stewart Paton during the years when he was director of the

laboratory at the Sheppard and Enoch Pratt Hospital. Dr. Edward N. Brush, the superintendent, had secured the services of Dr. Paton to organize the scientific work of the hospital and initiate the training of young physicians. Dr. Paton was looking for an intern to start the line and recommended me to Dr. Brush for the post. Other recent graduates followed in regular succession, and the association with Paton during those early years provided us with goals and assured guidance which was of inestimable value.

Stewart Paton was wisely critical and broadly tolerant; his quiet steady influence left naught but happy and wholesome impressions; his patience, his friendliness and the rare serenity and poise of a most lovable personality, are now rich memories in the minds and hearts of his pupils and associates which will endure as long as they live.

C. B. F.